Fifteenth Year of Publication

Industrial FINISHING

Reg. U. S. Pat. Office

Devoted to Product Finishing in the Factory

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Letters from Readers

OF INDUSTRIAL FINISHING

These letters (and many others) were answered recently by the editorial department, but are published here to reveal certain interesting trends of desire and activity in the industry, and to encourage additional inquiries, comments and suggestions. Further information about any of them can be obtained by writing this office.—Editor.

Worth-While Men Want Industrial Finishing

During the past few weeks we have had four or five requests for your magazine, INDUSTRIAL FINISHING. These requests have come from shop foremen and plant superintendents, and we are asked to send them a copy of your publication. In view of the fact that the requests are coming from very worth-while accounts, we believe it would be to our mutual advantage to have them receive copies of your journal.—D. L. Co. (Finish Mfr.)

Hot Lacquer

Mr. Simms' article about "Hot Lacquer", as published in May 1939 issue of INDUSTRIAL FINISHING, interests us very much. Who manufactures equipment for heating and spraying lacquers? We would like to know who manufactures the equipment and would want whoever does to come and call on us; believe we have an application for it.

May we congratulate you on the splendid article in INDUSTRIAL FINISHING, in which we think the subject of "Hot Lacquer" is very thoroughly and completely covered.—W. S. Co. (Office Equipment).

We are investigating the matter of hot lacquer and would like to have you give us all the information you have on this. Incidentally, we understand there is some department of the Government where we can get information on finishing problems and their regular bulletins. Can you tell us anything regarding this?—L. M. Co. (Furniture Mfrs.)

We have read the interesting article in June 1939 issue of INDUSTRIAL FINISHING, page 63, on the use of hot lacquer methods in the finishing room. This seems quite logical to us and we would greatly appreciate any further details on this method that you can pass on to us, such as proper methods and means of heating lacquer, name of manufacturer of heating equipment, proper spraying and any other special requirements.—K. Z. Co. (Architectural Woodwork).

Illustrated articles and advertisements about "Hot Lacquer" were published in May 1939 issue of INDUSTRIAL FINISHING. Perhaps the department of the Government that you have in mind is the Simplified Practice Division, Bureau of Standards, U. S. Dept. of Commerce, Washington, D. C.—ED.

Firm in India Eager to Represent U. S. Company

We notice in the January issue of your magazine that the Lea Mfg. Co. of Waterbury, Conn., has become a distributor for the American Cyanamid & Chemical Corp. We are interested in representing a line of industrial chemicals for use in nickel plating, chromium plating and electroplating, etc. If you would kindly put us in touch with one or two

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392 PARK AVENUE NEWARK, N. J.

manufacturers of such chemicals in your country, we shall be obliged.

As the matter will get delayed in your first giving us their addresses and then our writing direct to them, can't you inform them direct to send us their literature and prices, etc.?—Maira Sales Corp., INDIA. (Special Spray Finishes and Technical Paints for industrial manufacturing concerns).

Paint for Paper

We are wondering if you can put us in touch with a paint manufacturer who is producing a latex type of paint with a water base that can be used on a very porous paper similar to a blotter? We would like to get a one-coat job that would give a lustrous finish.—U. R. Co. (Moulded and Pressed Forms and Novelties in Paper, Fabric & Composition).

Refinishing Desks

We are rebuilding 100 grade school desks of birch and cherry wood. Our intention is to remove the old finishes, which are sometimes varnish and sometimes lacquer, with a remover and build up a new finish with lacquer in such colors as ivory, light green, and school brown. Will this give us a hard wearing, good-looking surface? What manufacturers make the remover and lacquers we will need?—Y. Vocational School.

If the surfaces are properly prepared by thorough drying and sanding after the old finish is removed (and after all traces of the remover have been rinsed off or cleaned away) and if suitable finishing materials are used, you should get a satisfactory finish. We are sending you the names of a few manufacturers of "removers" and lacquers. —ED.

Wood Graining

This office is conducting some research work in connection with a process of paint finishing which includes the reproduction of natural wood grain upon the surfaces to be finished. My client, a subscriber of your publication, informs me that about 6 or 7 years ago there appeared, in INDUSTRIAL FINISHING, an article that described in detail a method of faithfully reproducing a natural wood grain upon metal or other surfaces, but he is unable to locate the back number in question.

It is desirable that we have a copy of the article referred to, so we would appreciate your sending us a copy of the issue in which it appeared, or a photostat copy of the article, for which we shall be pleased to send you remittance to cover the expense involved.—P. T. C.

Several articles on this subject have appeared in past issues of INDUSTRIAL FINISHING, and tear sheets of some of them have been forwarded to the inquirer.—ED.

Book Cover Finishing

It has been suggested that it would be well for us to have a copy of one of your magazines that carried an article about finishing imitation leather products such as catalog binders, ring binders, etc. We do not know just how long ago this was; apparently it might be back as far as 18 months.—F. I. & A.

The article you have in mind appeared in August 1938 issue, pages 25 and 26—"Decorating Book Covers". We are sending you tear sheets of same.—ED.

Buffing Compounds

We would appreciate your advising us who manufactures S-28 and S-30 Buffing Compound; also No. 707, as mentioned in the May edition by Robert S. Leather (pages 28, 30, 32). —F. S. Co. (Metal Caskets).

These materials are products of The Lea Mfg. Co., 16 Cherry St., Waterbury, Conn.—ED.

Luminous Paints

Will you please tell us what concerns manufacture a luminous paint that can be used through silk screens? The purpose of the luminous paint is to throw an indirect glow on this paint from a Neon tube. The only illumination showing would be the luminous paint which would be indirectly illuminated from the Neon tube.—C. C. Co. (Advertising Products).

Will you kindly inform us who manufactures the luminous paint that when it is placed on an object it lights in the dark? I understand there are several colors made. Will

(Continued on page 65)

Durable Attractive Paint

BY C. C. SIMONS

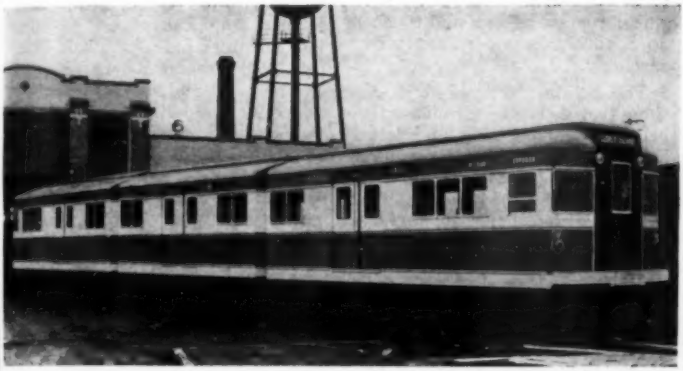
Colors on outside of car are light blue and white — with center roof section and ends in dark blue. Aluminum molding, striped in Chinese red, shows below the window line. The interiors are painted in ivory, light blue-green and dark green. Fixtures are in their natural aluminum color.

A STREAMLINED air-conditioned subway car, its body gleaming in two tones of blue and white, was recently built by The Clark Equipment Co. and placed in service on the Brooklyn-Manhattan Transit System in New York. Newsmen call it the "straphanger's Rolls Royce."

The 3-articulated compartments of the new car are mounted on four rubber-sprung and cushioned trucks. A new standard of subway silence is obtained through the use of super-resilient rubber "sandwiches" between the steel tires which run on the rails, and the wheel itself. More than 1½-in. thick, the rubber sandwiches dampen out shocks imparted to the wheels by rail joints and switches.

The streamlined body is made of 12,000-lbs. of strong heat-treated aluminum alloy of the duralumin class. Such alloys for use in transit vehicles have kept pace in development with similar alloys used in the manufacture of the latest type aircraft. Many of the structural features contain design principles commonly used in aircraft design. The interior is thermostatically heated and air-conditioned for riders' comfort.

Job on New Subway Car



Interiors are painted in three colors—ivory, light blue-green and dark green. Fixtures are finished in their natural aluminum color. The outside is painted in continuous panels of light blue and white, set off by natural aluminum moldings and a bright red stripe. The monitor roof and center end sections are painted in deep blue.

All metal parts were carefully and thoroughly cleaned with commercial cleaning compounds of nationally known make before assembly. All parts were prime coated before assembly and then touched up with the same primer after assembly. Painting operations, as performed in the shops of the Clark Equipment Co., Battle Creek, Mich., consist of the following:

After assembly the trucks were given one coat of metal primer, followed by two coats of black finish especially adapted for long hard service. Steel and aluminum parts of the underframe were prime coated before assembly, but different kinds of primer were used for the steel and aluminum. After assembly the entire underframe was given two coats of the same black that was used on the trucks. The aluminum equipment boxes and air ducts attached to the underframe were given the same treatment as the aluminum parts of the underframe—zinc chromate primer and two coats of black.

Before assembly, the aluminum truss plate flooring was dip-coated in a preservative coating. After assembly the underside of the flooring was given two coats of the same black as was used on

the underframe and trucks. The top side was given a coat of preservative before the laying of floor covering.

Unexposed structural surfaces in the walls and ceiling were primed, before assembly, with zinc chromate primer and touched up with this same primer after assembly.

The ceiling is finished in antique ivory. The upper side walls, between window sills and letter board, are painted a light blue-green. Wall space between window sills and the floor is dark green. These exposed surfaces were first prime-coated with a special aluminum primer before assembly and touched up again, after assembly, with the same primer. Then they were given four coats of surfacer, followed by water sanding. After this preparatory treatment the respective color coats were applied, there being four coats of pyroxylin enamel, in each color, to produce an attractive and lasting finish.

Exterior Paint Job

Outside exposed surfaces were given the same preliminary treatment as the inside surfaces—that is, up to the color coats. The monitor top and center of each end are dark blue—a cobalt blue. The roof areas on both sides of the monitor and down to the top edges of the windows, and the panel below the windows, are painted a lighter blue, the paint manufacturer's name for it being Greyhound blue. The upper side panels (the window area) and the wide belt below the lower light-blue side panels are white. These three different color coats, although all the same brand of material, varied so in coverage characteristics and opaqueness that it was deemed advisable to apply the dark blue in two coats, the light blue in three coats, and the white in five coats.

This Coronado bedroom group shows the influence of both provincial California design and Early American. The usually profuse hand decorations of floral and geometric designs have been minimized. Made of northern hard maple in the yucca finish. Shown by Wm. J. Jaeger Furniture Co. at the Los Angeles Furniture Mart in Los Angeles.

When the final color coats were thoroughly dry and hard they were gas sanded, as in fine automotive finishing, and then mist coated with lacquer thinner.

All bright metal moldings, stanchions and grab rails shown in the illustrations are made of Alcoa aluminum alloy, and were given a No. 201-A1 alumilite finish (consisting of grinding and buffing and an electro-chemical treatment). All decorative castings are made of Alcoa aluminum alloy and were given a No. 704-A1 alumilite treatment (similar to the preceding description).

The bright aluminum band molding below the window line—the one separating the white from the light blue—has a center stripe of brilliant Chinese red. This added decorative stripe is wide enough to be seen from some distance, and it adds to and enhances considerably the streamlined effect of the car.

As a final result, the new subway car has a finish of strikingly attractive colors and great durability. All seats are cushioned with nukraft, a decking consisting of animal bristles, twisted and dipped in latex to form a flexible but durable material for upholstering. The fabric on seat cushions and backs is mohair with a grey-green background containing a dark green figure. The motorman's seat is made of sponge rubber.

Will Produce Synthetic Phenol

Announcement has been made by The Barrett Co., 40 Rector St., New York, N. Y., a subsidiary of Allied Chemical and Dye Corp., that it will immediately construct a new unit at its Frankford, Pa., plant for production of synthetic phenol. Barrett has been a supplier of phenol to the chemical industry for over 60 years.

Stanley Chemical Co. Adds to its Technical Organization

The Stanley Chemical Co., East Berlin, Conn., announces that Mr. I. T. Darlington, a well-known authority in the field of industrial coatings, has recently joined its technical organization.

Mr. Darlington's chemical experience has always been in the field of organic chemistry. Following the war he was closely associated with the development of lacquers and lacquer materials, with laboratory and technical experience in the manufacture of nitrocellulose and solvents. During the past 18 years he has served in various capacities with some of the largest manufacturers of industrial coatings; has had direct charge of production and for several years served as chief chemist in one of these plants; was closely associated with the development of automotive finishes and the present day synthetic finishes.

Mr. Darlington joins the research and development staff of the Stanley Chemical Co. under the direction of Mr. E. M. Hayden, Technical Director. His knowledge and experience will be devoted to the study of definite problems and the development of new materials to meet the ever-increasing demand for highly specialized products. He will also be available for sales service work, and will so be directly available to the company's customers in an advisory capacity.

Federal Varnish Co. Announces New Appointments

John F. Ayrault, Jr., has been appointed general superintendent and works manager of the Federal Varnish Co., Chicago, Ill., with A. Bohnert as his assistant. Since graduating from Lehigh University in 1917, Mr. Ayrault has been connected with varnish making continuously in executive positions with several of the foremost manufacturers. He is considered an authority on synthetic resins and their uses, vehicle and pigment formulation, as well as their adaptability to finished varnish, enamel and paint products. Mr. Ayrault brings with him a most valuable experience in varnish manufacture.

Mr. Henry Drake of the Federal Varnish Co. has been appointed laboratory chief in charge of research. Mr. Drake, who has been associated with the company for a long period, is well known throughout the industry as a leading authority. He has originated many of the varnish and floor finishing products now in use.

Preparation of Metal

FOR PROTECTIVE FINISH COATINGS

How moisture penetrates coatings of finish and damages metal surfaces underneath, and what to do to eliminate or diminish this.

BY L. K. BISHOP
Manager of Paint Department,
The Paraffine Companies, Inc.

PRACTICALLY every paint, varnish, enamel and lacquer label has an introductory paragraph bearing the title "Preparation of the Surface." Usually the manufacturer can say very little more than call attention to the importance of cleaning the surface, particularly specifying the removal of oil, grease, rust and dirt, and emphasizing that the surface must be dry. In certain instances, as on floors or in refinishing furniture, the thorough removal of wax is necessary.

The user of industrial finishes so well understands the necessity for the treatments prescribed on the label that he probably pays little attention to the cautions expressed by the manufacturer. He proceeds in his own way to prepare the surfaces of the articles he is to finish, and this preparation oftentimes is even more painstakingly carried out than was advised by the manufacturer of the finishing material. The use of cleaning baths, of solvent vapor machines and the like, attests the awareness of the finisher to the problem of thoroughly cleaning metal surfaces.

To the finisher of small manufactured articles it may be of interest to look upon certain very large finishing jobs which are designed to meet conditions of most unusual severity. By way of contrast we may compare the conditions of service of the stamped case of an adding machine to the

underwater exposure of the bottom of an ocean going steamship. Or we may compare the finish on a toy electric railway car to the finish on 500 miles of 26-in. diameter natural gas main buried in a wide range of soils.

These comparisons are between conditions so far apart that it seems almost impossible to find any common ground among them, but there are common items pertaining to all of them.

Penetration of Moisture

No kind of organic finish, whether it is a bituminous enamel or a baked finish, is totally impenetrable to moisture. Seemingly there are only two types of material through which moisture will not pass at the ordinary temperature and pressure. These are the vitreous or glasslike materials, and "worked" metals. Such films as rubber, cellophane, electrolytically deposited metal films, paints, varnishes and the like, will permit moisture to pass through. The thinner the film the greater the amount of moisture that will pass through.

If the film is firmly bonded to a surface, such as a steel plate, the moisture may pass through, but until the bond is broken no moisture can accumulate between the film and plate. There is not sufficient physical space for such an accumulation, therefore a molecule or group of molecules of water which advances as far as the plate may begin a return journey to the outside. This return journey may be interrupted or even reversed by variations of atmospheric temperature, pressure and humidity. The effect, however, is the coating film finally finally reaches a state of equilibrium with the air and with the water vapor in the air, whereby certain amounts of air and moisture are held within the film. Of course, one of the largest factors in this is the amount of water vapor or liquid water present. It may range from the low of a very dry atmosphere to the 100% humidity stage, and finally to actual submersion of painted material.

In the case of some small household or office utensil of steel, with a baked enamel finish, the amount of air and moisture held within the coating is relatively small. Rusting or loosening of the bond from the steel will not occur unless the surrounding air is highly charged with water vapor. Even under severe exposure conditions the failure of the finish may be a slow process. In the case of the steel pipe line buried underground, or the submerged portion of the ship's hull, the coating on the metal practically at all times is exposed to surrounding high moisture conditions which will reach the maximum of total immersion in the case of the ship's bottom.

The Corrosion Process

Iron (steel) has an electrolytic pressure, better termed solution pressure, which acts in effect just as though each atom of metallic iron had a tiny spring beneath it. Moisture or water serves to loosen the catch which otherwise keeps the iron atom from being projected outward from the face of the metal. The released atom (termed an "ion") of iron carries with it a minute electric charge. Since this electric charge was derived from the body of the steel, it must return to the steel in order to restore a state of equilibrium.

The ion of iron, after giving up the charge of electricity to the moisture laden medium into which it was projected, must itself, as an atom, enter into chemical combination with dissolved salts, or it must decompose the molecules of water held within the medium and combine with them to form ferrous hydrate. Giving up the electric charge and the entering of the iron atom into a chemical combination occur simultaneously. The electric charge then must find its way back to the steel surface, usually at a point removed from the area from which the ion with its charge came away. The path of the returning charge, now borne by a hydrogen ion, may be long or may be short. In the case of rust forming on the edges of a steel eyelet for a shoe lace, the path of the returning charge is obviously short. In the case of a buried pipe line the returning charge may travel half a mile through the earth.

When the charge is restored to the steel surface the hydrogen atom, which remains after the hydrogen ion has given up its charge, must be disposed of. If an accumulation of hydrogen gathers on the surface of the steel, the film of hydrogen serves as an insulator; the steel is "polarized." Therefore oxygen must come to the aid of the process and oxidize the deposited hydrogen while still in the atomic state, so that further charges from the succeeding hydrogen ions can reach the steel surface. Other means, for instance mechanical rubbing, will remove the polarizing film of hydrogen.

The system is complicated. Interpose a bar to the process at any point and the progress of the corrosion is either stopped or drastically diminished.

Prevention of Corrosion

One of the most obvious ways to bar the process is to stop the water entering the film and progressing through to the steel surface. This may be effected, in the case of underground pipe, by building organic coating of waterproof character which are as much, in some instances, as ½-in. thick and which involve one or two wrappings of bituminous-saturated felt fabric.

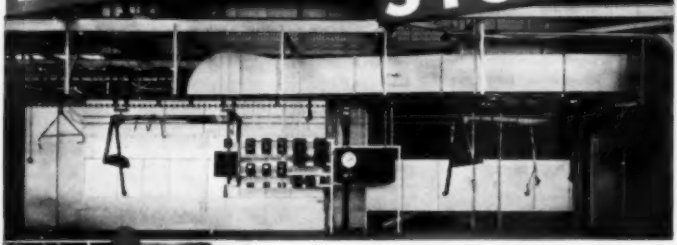
The ocean-going steamship has a somewhat harder condition to meet, but the steamship is drydocked every eight or nine months so that her painted bottom may be examined and the coating renewed in whole or in part. On the other hand, the pipe line may stay in the ground for periods of ten or twelve years, possibly more, before being serviced or "retreated."

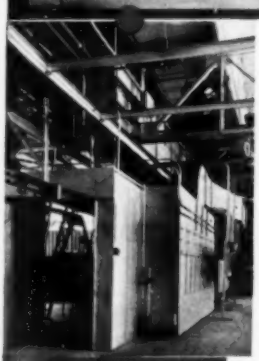
Another bar to corrosion is effected by using pigments which exert a counter electrolytic pressure. They serve to repress the offspringing of the charged iron ions from the steel plates. Such pigments commonly used are red lead, zinc chromate, zinc oxide and others — frequently termed "inhibitive pigments."

Another bar commercially used is the treatment of the metal surface by chemical processes. Among these may be mentioned the processing with certain phosphates. We are familiar with corrosion proofing by means of metal coatings; common among these are zinc, chromium and cadmium coatings. In many cases, if not in most,

(Continued on page 39)

Another Complete Mahon FINISHING SYSTEM





Illustrations show two views of a complete Mahon Finishing System installed in the Allis-Chalmers plant, La Porte, Indiana.

. . . the Second Allis-Chalmers plant to be Equipped by Mahon

The fact that Allis-Chalmers selected Mahon engineers to design and install a second complete Finishing System in their La Porte, Indiana, plant is significant of only one thing . . . they were well pleased with the operating efficiency and the layout of the first Mahon Finishing System installed in their tractor plant at Milwaukee, Wis. When you turn your finishing equipment problem over to Mahon, you can rest assured that the entire finishing system will be designed and coordinated by experts who are backed by years of research and practical experience in the finishing field. Their thorough knowledge of modern finishes and present day production methods will save you time and money. Consultation with Mahon engineers will not place you under any obligation—write today.

THE R. C. MAHON CO.

DETROIT — — CHICAGO

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Affords excellent atomization and fine control. Streamlined for speed—with interchangeable nozzles, less pressure drop, and less air consumption. Complete control over amount of material and width of spray. Priced at $19.50.

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June Furniture Show

DESIGNS, STYLES, WOODS, FINISHES, TRENDS

BY ROSALIE FLANK
American Furniture Mart

REVIEWING the combined spring and summer National Home Furnishing Show, held this year from June 5 to 17 at the American Furniture Mart, we see an interesting picture of a great industry which, trying to change marketing habits of more than two decades, found that progress in marketing and selling home furnishings lay not in revision or reduction of markets but rather in improved methods of production, construction, finish and styling.

Last January the Board of Governors at the American Furniture Mart voted for a reduction of markets in the hope of reducing the cost of marketing. However, by the end of the first week of the June market, the Board of Governors, made up of some 30 tenants of the building representing all phases of the home furnishings industry, met to decide that the American Furniture Mart would return to four markets a year, naming the dates of the fall and winter markets as October 30 to November 4, and January 8 to 20.

Prices were firm, the forthcoming wage and hour law which will become effective September 1 having a steadying influence upon price. It was generally agreed, however, that values were the finest in years and that manufacturers in all price brackets were paying greater attention to styling, construction and finishing details than in many years.

With regard to trends in design, finish, hardware, etc., the June market revealed many trial balloons launched as feelers of future trends. Similar to the

---

Illustrations on opposite page: 1) A modern 18th Century mahogany tambour desk, with simple lines. Chair has a cane back. 2) Typical of the new trend is this well-styled Contemporary French china and chair made of walnut and beech with antique walnut finish. Chair is upholstered in brown and gold-figured damask. 3) A maple suite, significant of the new trend. 4) A bleached mahogany bedroom suite finished in a toast brown. Brass hardware, wood framed mirrors, dignified carving beneath mirror, and modified waterfall fronts are high-style notes. 5) An oak dinette styled in the western manner. Lacquered trim, leather seats and relief carving add a gay modern touch. 6) Stripped of its frills and gilding, this simplified French cocktail table is Louis XV in form only, yet it revives the love for French furniture. The frame is birch, the top walnut, finished in a French walnut tone. 7) A chrome bridge set with birch top which may be extended to 53-in. The chrome chairs are upholstered in rich blue leatherette. . . . Photographs, courtesy of the American Furniture Mart.

spring market, when trial balloons are released preparatory to making final plans for the summer market, the June market indicated that manufacturers were carefully feeling their way on new developments, but were definitely set on certain, well-defined trends. Dealers also showed some hesitancy on new trends, making careful note of the newcomers for future reference, but placing orders on what they felt were established styles.

Simplified French; Also Regency

Looking first at the newcomers, which indicate possible trends, simplified French named 20th Century, American or Modern French was picked as the "most likely" star for next season. Appearing in scattered groupings in case goods, novelty and upholstered lines, the Contemporary French groupings followed Louis XV lines, but were stripped of all ornate details such as gilding, marquetry inlays, fancy carvings, etc., and appeared almost provincial in their restraint and simplicity.

The finish most generally applied was similar to French walnut—a soft, satiny, clear warm brown with an aged mellowness adding to the charm of the design. Walnut, magnolia, birch, beech and fruitwoods were used and finished in the French walnut tone, one manufacturer showing an occasional group with burl walnut tops and frames and legs in birch. The entire piece was finished the same color but the clear grain of the birch emphasized the simple carving.

Regency staged a comeback, appearing in both case goods and novelty lines. It wasn't a surpise to find Regency in any quantity, since decorators have been talking this period for several seasons. For the most part the Regency pieces were shown in mahogany with the usual 19th Century type of hardware, brass arrows, reeding, metal grills, etc. Some pieces were shown in black enamel with a gold trim, but they were either occasional pieces or dinettes.

World's Fair Influences; Modernized Period Styles

World's Fair influences were noted in special "World's Fair Suites" designed for special houses at the Fair. In most instances, where suites were streamlined, even the hardware had been eliminated to keep a smooth, unbroken surface.

Well defined trends were the simplified 18th Century pieces. Spade shaped legs, simple marquetry trims and modernized designs of Sheraton, Hepplewhite and Adam origin were style leaders throughout the market.

Modern continued to replace almost completely the borax of five years ago. Gadgets ranging from built-in tie racks to blanket compartments, ash trays, locks, clocks, radios, fans in beds, and "utility features" of all kinds offered plus value and eye appeal to low priced suites, many of which employed highly figured veneer for added "flash." In the medium and better grades of merchandise, Modern appeared in more conventional cabinet woods in both light and dark finishes. Extra large mirrors added a dramatic note. A tendency toward Modern in the upper bracket was noted as Modern suites in solid woods, with simple carvings and

streamlined effects were shown.

Swedish Modern, as such, no longer continued to make news. Those suites which have been selling were retained in the lines, but very few new groups were added. An alternative of the Swedish was the simplified 18th Century groupings in light finishes.

Colonial; Early American

Colonial and Early American designs continued to make steady progress, as a very strong American feeling pervaded the market. Much of the furniture was inspired by the history of the life of our own country. Many pieces were copies of reproductions found in Natchez and old homes in the "deep South", with canopy beds, pineapple poster models, highboys, spool poster beds, and such quaint pieces as a "rockee" (a combination of rocker and cradle), sugar chest night table and other novelties adding interest. Cherry entered the ranks along with maple, birch, mahogany and walnut in fashioning these new suites. The use of glass hardware was noted on several of the new models, giving a contemporary feeling to the pieces.

Light Finishes and Medium

Light finishes have settled down to a medium tone midway between the extreme peroxide bleach and the conventional dark finish. For the most part the light finished pieces were highly waxed. In dark finishes, the tendency was away from the highly polished woods and more toward the aged and patina finish. Walnut took on a golden tone, mahogany a brown with a red tinge.

Lighter finishes on maple was a trend worthy of note. Practically every manufacturer included at least one new light grouping. Newest finish was a "creamy caramel" tone resembling maple that had weathered generations of sun and wind. The effect was a soft, mellow tone.

Hardware; Upholstery

Hardware or the lack of it were important talking points. In many instances special hardware was a decorative theme of the suite.

In the upholstered line, textured fabrics in all types of designs were shown in a predominance of green, the color ranging from a light chartreuse to a deep bottle green. Lemon yellow, orange and biege were popular.

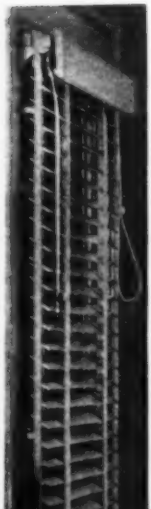
Specific Highlights and Trends

Other highspots of particular interest included the use of brass galleries as trims on occasional furniture; the growing number of breakfront desks in the medium and lower price brackets; simplified marquetry trims on 18th Century pieces; carved trims on the sides of case pieces instead of the plain wood panels; an increased use of relief carving as trimming; chromelegs on kitchen furniture; a large number of linoleum tops on dinette and kitchen tables; green instead of red as trimming on kitchen furniture; a decrease in the number of dining room suites shown (280 less this market than in January) and the growing number of dinettes; the increased number of junior dining room groups; the use of printed wood finishes on lamps, card tables and metal furniture; low priced stainless steel furniture; a greater number of permanent card table sets; an increased use of leather upholstery.

Bake Finishing Wood Slats

BY W. H. ROHR

DURALO VENETIAN blinds, with wood slats finished in a durable 3-coat synthetic bake finish, are manufactured by the Sportsman's Equipment & Mfg. Co., Danville, Ind. The bake finish feature is not just a crack-brained excuse to make the Duralo blinds different from others. There is a very definite and vitally important reason for it—just as there is a definitely specific reason for some unusual mechanical features about the venetian blinds manufactured by this concern.*



When Mr. Wm. F. Collins, owner and manager of the concern, first toyed with the idea of manufacturing venetian blinds, he gave consideration not only to the usual features of this type of blind, but also to the matter of maintenance and cleanliness. He felt that every venetian blind placed in service should last for years, during which time it should be capable of being easily cleaned repeatedly and should retain its durable attractive finish. Accordingly, he developed a type of blind from which the individual slats can be easily and quickly removed—as easily and quickly as you can pick up a loose slat from your window sill. Naturally this feature encourages frequent washing of the slats in localities where considerable dust and dirt accumulate, hence the necessity for a coating that will withstand repeated washing without harm to the finish or to the thin wood slats.

In reaching for this objective, several materials other than wood were considered for slats but all of them, including various types of metal slats, were rejected—some for one reason, others for another.

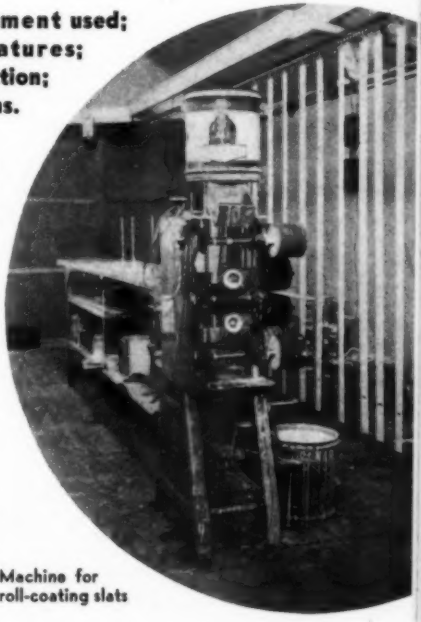
Had Mr. Collins realized that he would encounter one-half of the trouble, delay and expense that this bake finish idea was going to cause him, he declares he would have dropped it and probably never would have taken up the manufacture of venetian blinds. By persistently clinging to his original plan of applying a bake finish to thin wood slats, he was obliged to try and reject several different woods, finishing materials, kinds of equipment,

*No advertising intended; the company has more business now than the factory can turn out.

for Venetian Blinds . . .

Woods, finishes and equipment used; baking cycles and temperatures; handling blind slats in production; solving many baffling problems.

methods of operation and even workmen. However, his untiring efforts, aided by the cooperation of certain manufacturers of finishing materials, eventually produced the desired results. Production is now under way and, although the volume of output is insufficient to keep up with orders, the quality of Duralo venetian blinds, including particularly the bake finish on the wood slats, is excellent.



Machine for roll-coating slats

Bake Basswood Slats 35 Minutes at 160°F.

The domestic wood that stands up best under the bake finishing process on thin blind slats is basswood. Slats made of this wood will stand the three baking cycles of 35 minutes each at 160°F. All of the pines and cedars are unsatisfactory, as some of the resin content will exude during the high heat of baking and ruin the finish. Any color of enamel can be used—although if blue happens to be chosen, the material must be several shades darker than the blue finish that is really desired, because blue, when baked on wood, becomes lighter in color. At least this is what has happened to all of the synthetic blues tried here so far.

The foreign woods that withstand the bake finishing process best are those that come from the west coast of Africa—mahogany, ayous and lacewood. Our own quartered white oak, carefully selected and sawed to sand 1/10-in. in thickness instead of ⅛-in., will take a bake finish satisfactorily. These last named woods are termed "furniture woods" and are given a clear synthetic bake finish for durability.

Selection of the lumber for slats is quite important—uniform texture, straight grain, freedom from knots and other defects being particularly essential. The slats must be accurately and smoothly machined and then carefully sanded to "velvet smoothness." The sanding must be done with light pressure, using sharp free-cutting abrasive paper. To force dull paper with pressure would be extremely harmful to the surface of the slats.

Even with all of this special care the baking of the prime coat will cause surface fibers in the wood to rise, giving the prime-coated surface an objectionable fuzz-like effect which must be smoothed down before the enamel coats are applied. Preheating the slats and various other treatments have been tried to prevent this raising of the wood fibers, but no "trick treatment" has worked out satisfactorily so far. One method of smoothing down this fuzz-like surface is to sand the slats on a rotary brush-type sander.

Roller Coating Machine Applies Finishing Material

All finishing materials are applied in a uniform thickness film with a modern 4-side roller coating machine which coats both sides and both edges simultaneously. This machine is regularly furnished with either one of two kinds of paint-application rollers, but neither of these two types of rollers worked entirely satisfactorily for applying the finishing material with the smoothness and uniformity that is required for a bake finished job on thin wood slats. After considerable experimenting with different types and makes of rollers, Mr. Collins elected to devise equipment for making his own rollers according to a special formula. He finds that he obtains best results by using a very soft gelatin roll, one that is almost as soft as the Jello you see served for desert.

The rolls must be perfectly concentric with their shafts and they must be accurately adjusted to apply the paint freely and uniformly without pressure. When the machine is in steady operation the soft gelatin rolls will have to be changed two or three times a day. However, the used rolls are shaved off clean, melted and molded into new rolls again. The addition of a small quantity of formaldehyde to the ingredients (glue, molasses, glycerine) used in making soft gelatin rolls will lengthen the life of the rolls so they can be used much longer without changing, but rolls containing formaldehyde must be junked after they have been used once. They can not be melted and recast into new rolls.

The performance of the roller coating machine must be checked frequently—as much as once or twice every hour while the machine is in steady operation.

The ends of the slats are spray coated before they enter the roll coater. Several slats are bunched tightly together, sprayed only on the ends and then quickly separated.

As each prime-coated wood slat leaves the roller coating machine, the operator snaps a special clip over one end and hangs it to an overhead chain conveyor or carrier that takes it into and through the oven. To handle the wet painted slats the operator wears special gloves. The thumb and

forefinger of each glove is reinforced with thin blocks from which protrude sharp points of long tacks or brads so that only these few sharp points touch the wet slat as the operator receives it from the machine and hangs it to an open link of the chain conveyor.

Conveyors Through Oven; Viscosity of Materials

Two sets of overhead conveyors are in service but they are on different levels. One overhead chain is high enough to take 12-ft. slats hanging vertically. The other is only high enough to take slats 6-ft. in length and less. Each conveyor line winds back and forth around sprocket wheels to give nine straight lines of travel, which total up to 300-ft. in the oven. The rate of travel is adjusted to complete a baking cycle in 35 minutes.

The viscosity of the flat prime coat, measured with a Ford viscosity cup at a room temperature of 72°F., is 110 seconds; that is it takes 110 seconds for a filled Ford cup to empty through the small hole in the bottom. The viscosity of the material for the enamel coat, measured under the same conditions, is 140 seconds. This matter of viscosity is of vital importance and it must be carefully and accurately adjusted to the room temperature at the time the material is being applied to the slats. The correct viscosity at which any brand of finishing material will work best for coverage, flow, baking, film thickness, smoothness, and room temperature must be determined by experimenting. Then further calculations must be worked out to vary the measured viscosity to compensate for possible variations in the room temperature and humidity at the time it is used.

When prime-coated slats leave the oven they are taken off the conveyor, the raised fuzz is smoothed off and they are made ready for the first coat of synthetic enamel. The first and second coats of enamel are applied in the same manner as the prime coat, but a period of at least eight hours must elapse between oven bakes of enamel—that is, with the materials now used and the conditions under which the plant is now operating.

The natural finished hardwoods mentioned previously in this article are finished in clear baking synthetics by the same process.

Essential Details in Obtaining Smooth Finish

An easily overlooked detail that is of tremendous importance to the success of this finishing system is the length of travel by conveyor between the roller coating machine and the oven. This length must be such that the "flow" of material on the slats becomes complete at room temperature before the coated slats enter the oven. As soon as oven heat strikes the slats, all trace of "flow" stops abruptly, and if the "flowing" hasn't become quite complete before slats reach the oven, then the abrupt setting of the material will cause lengthwise corrugations to appear on the finished surfaces. These corrugations may be almost imperceptible but they will be highly magnified in the final baked enamel finish. In order to take care of this matter perfectly the length of the overhead carrier be-

tween the roller coating machine and oven is adjustable so that the time interval here may be varied to suit conditions, making it anywhere from 8 to 14 minutes.

Another detail — one of the many tricks in this "tricky" work —also has to do with obtaining a perfectly smooth final finish. One brand of baking synthetic enamel persistently gave unsatisfactory results until a little No. 9 kerosene was mixed into it. This addition of No. 9 kerosene (not to exceed 2%, usually less) caused the material to flow out smoothly so the slats came out with a final bake finish as smooth and flawless as the surface of heavily enameled paper—no pimples, pinholes, blisters, ridges or orange peel.

Clean Air in Oven

Naturally the heated air introduced into the oven must be absolutely clean. It must be free from particles of dust or sparks that might cause an explosion. To assure this condition the air blown from the hot air furnace passes through safety screens. Fresh air must be introduced constantly to effectively dry and bake the synthetic finish. The arrangement of air volume is such that a slightly outward pressure prevails inside the oven so that any flying dust or lint from the outside can not be sucked into the oven where the conveyor enters and leaves.

As a result of all the care taken in the selection of the wood, the selection and preparation of the finishing materials, the careful control exercised at the coating machine and in the oven, the bake-finished wood slats used in Duralo venetian blinds are practically waterproof and warp-proof. They have a smooth hard finish that doesn't easily catch dirt or dust—a durable finish that can be easily and quickly cleaned and restored to its original luster. While this finish is twice as costly as sprayed lacquer or an air-drying enamel, repeated weatherometer tests prove that its useful life is three to four times longer than the air-dry finish.

Maas & Waldstein Occupy New Chicago Office and Warehouse

The Chicago, Ill., office of Maas & Waldstein Co., makers of industrial finishes, Newark, N. J., has been moved to occupy a new building located at 1658 Carroll Ave. This building, a modern one-story sprinklered structure, houses both the office and the warehouse and provides the extra space required by the company's increased business in mid-western territory. The building is located on the Pennsylvania R.R. and has siding connections so that carload shipments can be made and received. Sufficient ground is available to take care of future expansion.

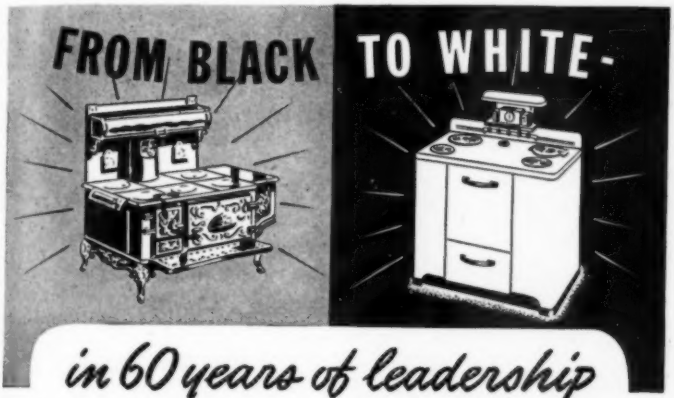
Finish Engineers; Seattle, Wash.

The Washington Color & Chemical Co., 2022 Second Ave., Seattle, Wash., has taken on a new warehouse in order to take care of increased business. A testing laboratory will be maintained where special products will be worked out for the finishing trade. An engineering department on plant installation and equipment will also be maintained.

Mr. Eugene T. Mahoney, owner of the company, is well known to the trade in the Pacific Northwest, and has made a reputation on finishing problems among Northwest industries. The firm is five years of age and represents a number of manufacturers of finishing materials and equipment advertised in this paper.

Blast Cleaning of Metals

A 16-page bulletin that describes and illustrates equipment and methods for cleaning metal surfaces, preparatory to painting, by the use of abrasive blasting, is offered by the Pangborn Corp., Hagerstown, Md. This bulletin, printed in two colors on heavy paper 8½x11-in., shows typical installation pictures and describes the airless cleaning of flat and fragile work in great variety.



in 60 years of leadership

● In 1879 Grandma's cookstove was black. In 1939 Granddaughter's modern range is pure, gleaming white. Nubian Paint & Varnish Company supplied the finish for both, which is another way of saying they were finished in the best material available to stove manufacturers at the time.

The improvement in kitchen ranges in the last sixty years is a triumph of product engineering. Constantly improved finishing materials contributed more than any other single factor toward this development. The resulting improved appearance is largely responsible for today's broader demand.

Nubian Paint & Varnish Company has steadily maintained its leadership in supplying finishes to stove manufacturers. Today, our NUBELITE—flexible, one-coat white with greater heat resistance and color permanence—is the most dependable and highly perfected finish available to the stove industry.

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Everywhere on Everything

Photo, courtesy Maas & Waldstein Co.

CHEMICALLY-RESISTANT *Finishes for*

WHILE MOST laboratory tables, cabinets and furniture are finished with transparent material, to allow the grain of the wood to show through, the tops are usually finished in black, and occasionally there is need to finish the cabinet work itself in black or colored enamels. Colored enamels are more frequently used on metal tables and cabinets, however.

Where baking facilities are available, it is possible to finish metal furniture with a variety of synthetic enamels that will withstand many of the chemicals referred to in the first part of this article. It is more unusual, however, to find colored enamels that can be air-dried to produce a chemical resistant finish.

A green chemical-resistant enamel was recently tested against the following destructive agents, with the results indicated:

A) **Drying Time:** Sets out of dust in less than 15 minutes; dries hard in less than 4 hours. Submitted to tests 48 hours after application.

B) **Gasoline Test:** Immerse for three days. No lifting or blistering. Film as hard 12 hours after test as before test was started.

C) **Caustic Test:** A puddle of 5% caustic soda solution was allowed to stand on the finish for 15 minutes with only a slight fading of color. No blistering or lifting. Film slightly softened but as hard as originally a few hours after the test.

D) **Acid Test:** A 10% solution of hydrochloric acid produced no fading, blistering, lifting or softening of the film after 15 minutes of contact with the finish.

E) **Alcohol Test:** Immersion in 95% (190 proof) denatured alcohol for 15 minutes produced no lifting, blistering or fading. The film was softened slightly but regained its original hardness a few hours after the test.

F) **Water Test:** Immersion in water containing salt, chloride compounds, iodine, alkali and several other destructive agents for 84 hours produced no fading, lifting, blistering or softening.

G) **Adhesion Test:** When the film was cut with a knife it was

PART II

Laboratory Furniture

BY R. L. MASTERSON

found to have excellent adhesion to the metal. When bent over a ¼-in. mandrel, the finish did not crack, chip or flake at the bend. When the metal was extruded from the back with the ball end of a mechanic's hammer the finish did not break.

While the enamel under test was green in color, there appears to be no reason why it could not be produced in other colors, the shade being limited only to the availability of chemically-resistant pigments required to produce it.

The production of a chemical resistant black finish on wooden laboratory table tops was formerly a long, tedious, slow process, requiring not less than six alternate applications of two different chemical solutions, to say nothing of a final vigorous rubbing with linseed oil, to produce a carbonized, chemically inert finish that would not smudge a white cloth when rubbed over it. The two chemical solutions required for this treatment consisted of:

No. 1 Solution

Copper sulphate	(grams) 125
Potassium chlorate	(grams) 125
Water	(cc.) 1000

No. 2 Solution

Aniline hydrochloride	(grams) 60
Hydrochloric acid, Spg. 1.2	(cc.) 90
Water	(cc.) 500

The method of application consists of painting the wood first with No. 1 Solution. As soon as it dries sufficiently, apply a coat of No. 2 Solution. Allow to dry for several hours. Wash with hot water and repeat the operations several times until the wood is carbonized to a dark green color. Finish by rubbing with raw linseed oil on a cloth, until a jet black surface is obtained.

Four or Five Coats of Chemical-Resistant Enamel

The modern method of producing a jet black, chemically-resistant finish on wood, pressed fiber board and similar surfaces is to spray four or five coats of a very special chemical-resistant black enamel. The resultant finish is not only highly resistant to all acids, alkalies and varnish-removing solvents and chemicals, but will withstand lighted cigars and cigarettes and the flame of a match held directly against the finish. The surface is extremely hard and scratch-proof, and the adhesion is excellent. The wood must be cut in order to separate

the finish from it. It is practically indestructible.

Having such unusual properties, naturally, this finish must be used according to unusual instructions, but when the instructions are followed the results are marvelous. If the wood has open pores, they should first be filled with a good grade of paste wood filler in the usual manner. The black finish is shipped in a separate package from a special reducer which must be used with it.

When ready to use, mix 8 parts of the black finish with one part of the special reducer. Let this mixture stand one hour before spraying. The individual materials are very thin in body, but as soon as they are mixed together, a progressive chemical reaction starts, which, at the end of an hour, has progressed sufficiently to impart considerable body to the mixture.

It is important to allow one hour for this reaction to take place before the finish is applied to the work. Likewise, it is important to mix only as much material as will be used within a few hours, as the chemical reaction continues to progress and will eventually gell the mixture into a solid mass. In fact, this is exactly what happens after the mixture has been applied to the surface being treated.

Four or five coats are customarily used in finishing table tops or other wooden or composition board surfaces, allowing about an hour between coats. The final coat should be allowed to air dry overnight. Where a smooth rubbed finish is wanted, it is advisable to let first two coats dry overnight; then water-sand them before proceeding. After the final coat has dried overnight, it can be sanded with fine sandpaper and oil, rubbed with pumice stone and oil, or rubbed and polished with a rubbing compound similar to that used for rubbing automobile bodies.

Impartial tests of old wood-carbonizing finish against this new chemical resistant finish gave the results shown in Table II.

In addition to the acid tests listed in Table II, these finishes were given a severe heat test. An electric heater was mounted face down, so the heating element was 6-in. from the face of the block of wood being tested. A control block of wood, which had not been finished in any way, began to smoke after 15 minutes; at the end of 1½ hours, it was badly scorched. After one hour the rosin had boiled out of the "Old" finished block. The "New" finished block was subjected to the same heat for 4½ hours, with no visible effect. The temperature, as indicated by a thermometer, was 325° F.

While nitric acid and sulphuric acid had the greatest effect on

Testing Material	"Old" Finish	"New" Finish
Concentrated Hydrochloric Acid (5 m.)	Marked faintly	No effect
Concentrated Sulphuric Acid (5 min.)	Marked distinctly	Marked faintly
Concentrated Nitric Acid (5 minutes)	Marked more than with other acids	More than with other acids but not badly
Hydrochloric Acid, 1 to 1 (5 minutes)	No effect	No effect
Sulphuric Acid, 1 to 1 (5 minutes)	Marked faintly	Marked very faintly
Nitric Acid, 1 to 1 (5 minutes)	Marked faintly	No effect
Sodium Hydroxide, 30% (10 minutes)	Marked distinctly	Marked faintly

Table II—Results of various acid tests to old and new chemically-resistant finishes.

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★ When you send your product out to meet competition, be sure of a good finish . . . be sure it will land safely in the possession of a consumer instead of becoming a lingering shelf - warmer.

The best assurance of a quick sales turnover is an attention - getting finish . . . a finish that directs the "first look" to your product.

In order to assist manufacturers in making their merchandise more sales-worthy we maintain a complete creative studio. A staff of expert artisans, under the direction of Manuel Gaminde, analyze products and develop sales-stimulating finishes which are practical from both a material cost and labor standpoint.

We invite reputable manufacturers to use this creative service without cost or obligation. Many manufacturers of products in wood, plastic and metal have found it decidedly beneficial. Your inquiry will be acknowledged promptly.

ROCKFORD VARNISH COMPANY

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both finishes, the "New" finish was much more resistant than the "Old." The luster of the "New" finish was hardly affected by any of the tests.

Government specifications for black impregnated tempered welded fiber used for tops, drawer bottoms and base mouldings call for the top, bottom and all edges to be finished with a dead black finish to withstand the following tests, when immersed in the solution for 24 hours at room temperature.

The non-chemical resistant black finish referred to here will withstand all of these tests when the testing reagent is used in dilute solution. It is softened by a few of the stronger materials such as sulphuric acid, sodium hydroxide, and sodium hypochlorite, when used in very strong concentrations — especially if the finish has been applied to a compressed wood fiber board. This is partly due to the action of the strong chemicals on the board itself rather than to an inherent defect in the finishing material. The use of a proper board, which is thoroughly impregnated with a chemical resistant synthetic resin, would greatly reduce the destructive effect of the strongly concentrated materials, provided that all edges and the back and front of the test specimens are thoroughly covered.

A) Carbolic acid, any dilution up to 90% concentrated; no effect.

B) Sulphuric acid, any dilution up to 90% concentrated; no effect except slight darkening.

C) Hydrochloric acid, any dilution up to 37% concentrated; no effect.

D) Nitric acid, any dilution up to 30% concentrated; no effect except slight dulling.

E) Acetic acid, glacial, any dilution up to 99% concentrated; no effect.

F) Formic acid, any dilution up to 90% concentrated; no effect.

G) Chromic acid, any dilution up to concentrated; no effect.

H) Hydroflouric acid, any dilution up to concentrated; no effect except very slight discoloration.

I) Sodium chloride, saturated solution; no effect.

J) Ammonium hydroxide, any concentration; no effect.

K) Sodium hydroxide, any concentration up to 20% solution; no effect except darkening and slight softening.

L) Atmosphere of moist chlorine gas; no effect.

M) Sodium carbonate, saturated solution; no effect.

N) Sodium hypochlorite, commercial concentrated solution; no effect.

O) Acetone; no effect.

P) Alcohol, 96% concentrated; no effect.

Q) Toluol; no effect.

R) Amyl acetate; no effect.

S) Gasoline; no effect.

T) Mineral oil; no effect.

U) Vegetable oil; no effect.

V) Carbon bisulphide; no effect.

Where such extreme chemical resistance is not required and a quicker method is desired, there is a different type of black chemical-resistant enamel that can be used. One or more coats can be applied by brushing full body, or the material can be reduced to spraying viscosity with solvent naphtha, toluol, or hydrogenated naphtha. Petroleum naphthas cannot be used. The results will be excellent compared to customary

finishing methods, but will not compare in any way with the resistance of the "New" finish.

Impregnated stone composition fume hoods and table tops are usually finished in a wax finish consisting of natural waxes suspended in a hydro-carbon solvent. It is usually specified that the wax shall have a melting point not lower than 175° F., and that the distillation range of the solvent used shall be between 300° and 425° F. The flash point of the wax mixture should not be less than 100° F. The wax is heated to 95° F. and applied to all exposed surfaces. It is allowed to dry for 12 hours and is then polished with a high-speed electrically-operated polishing brush. Additional coats are then applied, dried not less than four hours and electrically polished.

Baking Enamel With Infra-ray Lamps

Plating heat lamp reflectors with gold is one of the more surprising of the hundreds of diverse operations conducted within the Rouge plant of the Ford Motor Co. at Dearborn, Mich. The reflectors are used in electric ovens of new design which bake the paint on Ford and Mercury car bodies "from inside out."

The heat lamps, thousands of them, are arranged in tunnels, and the automobile bodies travel through on overhead conveyors. The method is so efficient that the primer coat is baked in 15 minutes instead of the hour formerly required when steam-heated ovens were used. This speed, Ford engineers who developed the method explain, is the result of using infra-red rays which penetrate the primer coat and heat the metal underneath. The heat then dries the primer coat rapidly from the inside.

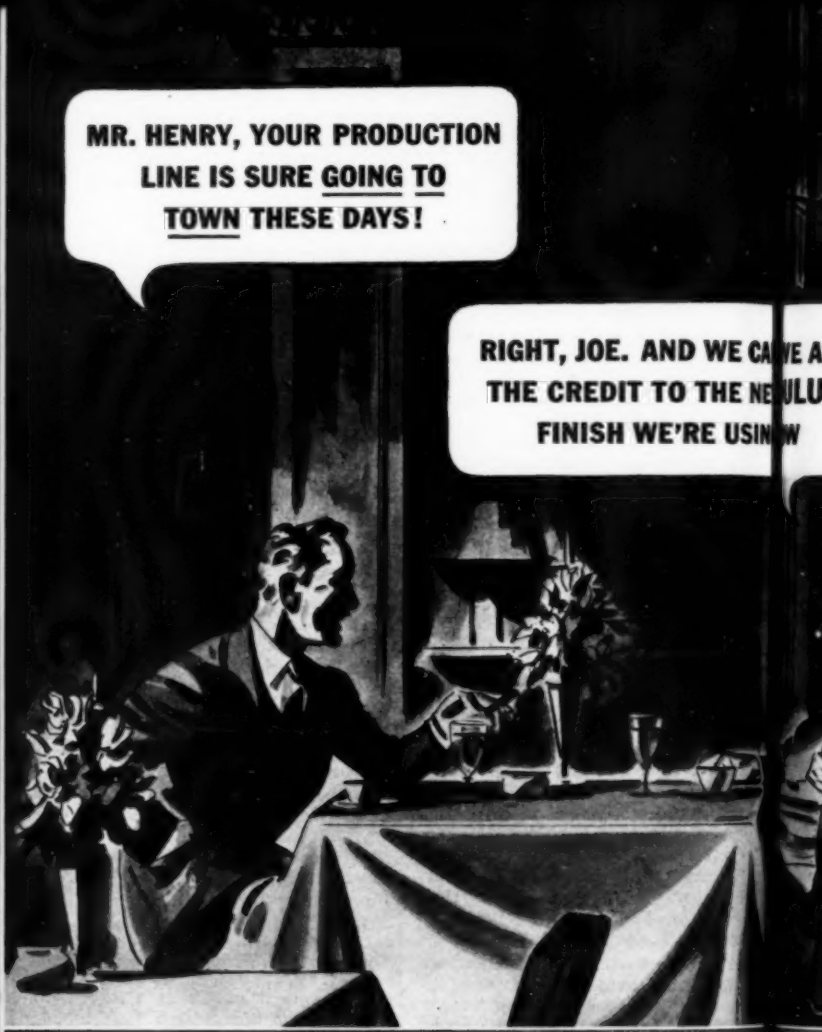
Gold plate was selected for the lamps because gold reflects infra-red rays with less loss than other surfaces. A little gold goes a long way in this electro-plating process. A piece of 24-karat gold 1/16-in. thick and 1½-in. square and weighing 45 grams is sufficient, in fact, to plate approximately 500 reflectors. The actual time of plating, once everything is in readiness, is only 50 seconds.

Approximately 14,000 of the gold-plated heat lamps now are in use in the Rouge plant, and others are being made as application of this enamel baking method is extended. In order to keep the reflectors at top efficiency, about 200 are removed daily from the tunnel and replaced by spares while they are being cleaned or replated. The infra-red process was developed in the plant especially for baking Ford synthetic resin enamel, which retains its luster and color for the life of the car.—METALS & ALLOYS.

V. J. Dolan Appoints Two New Representatives

To help cover the North Carolina and Virginia territory for the V. J. Dolan & Co., manufacturers of wood finishing materials, Mr. Dolan announces the appointment of Mr. B. F. Huntley, Jr., of Winston Salem, N. C. Mr. Huntley will work in conjunction with Mr. Emmet Holton who has handled the line for several years. Mr. Huntley has had several years experience in the furniture industry with his father, and is favorably known throughout the territory.

In the state of Michigan, Mr. Milton Stilwell has been appointed as a representative for both sales and service work. Mr. Stilwell has had many years of experience in finishing, as well as in sales and service work, and should be well qualified.


MR. HENRY, YOUR PRODUCTION LINE IS SURE GOING TO TOWN THESE DAYS!
RIGHT, JOE. AND WE CA VE A
THE CREDIT TO THE NE ULU
FINISH WE'RE USIN W

DU PONT

DULI

FULFILLING AGAIN THE DU PONT PLEDGE OF BET NG

GOING TO TOWN *is* right! This new DULUX finish for furniture has already set new standards for economy and speed in production. It is the combination you've always asked for—a finish that gives the flow and build of varnish and the speed and quality of lacquer. The film of DULUX is clear and bright with excellent depth of appearance. It compares with the best lacquers in print resistance and water resistance—as well as resistance to scratching, marring, alcohol and cold cracking.

DULUX is economical. It has unusual build, and that means that you need *only one coat!* This not only eliminates one whole operation of spraying and drying that is necessary with lacquers—but it also offers material savings up to 30%. It saves still more time because it is so easy to rub.

DULUX speeds up production. This new Du Pont finish dries so fast at elevated temperatures (2 hours at 150°) that it makes possible a *5½-7½ hour finishing schedule from sealer to packer.*

If you are looking for ways of speeding up production and saving money, investigate the time and money-saving advantages of DULUX! For full information write to E. I. du Pont de Nemours & Co., Inc., Finishes Division, Wilmington, Delaware. Canada: Canadian Industries, Ltd., Toronto. Great Britain: Nobel Chemical Finishes, London.

Visit the Du Pont "Wonder World of Chemistry" exhibits at the New York World's Fair and the Golden Gate International Exposition

LUX FOR FURNITURE

BET NGS FOR BETTER LIVING THROUGH CHEMISTRY

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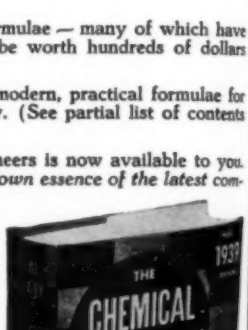

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(Continued from page 16)

the articles so proofed are given paint coats either as a further protection or for decorative uses.

All of these methods—and only a few of the many have been touched upon here—are designed to break up the electrolytic process of corrosion. As we have said, if an effective bar can be put in the way at some one of the many points along the route of the corroding process, the whole process may be stopped. It is like breaking up the trip of an automobile. One may disconnect the wiring; he may destroy a highway bridge along the route; or he may have the driver arrested (assuming the driver is an offender, like the corrosion process). However, corrosion is adroit, like the criminal, and even though it is barred and diverted at the point of initial appearance, it is more than likely to turn up again in a new location and operate under different conditions.

Bonding Finish to Metal

Bonding the finish to the metal is an important item in securing protection. One of the objects of removing grease from a surface to be finished is to make sure that the finish will actually reach the surface and adhere to it. In the painting process which is employed on the hulls of ships, choice is made of paints of such character that they will not lose their bond to the metal, even after months of submersion. As an instance, a linseed-oil, red-lead paint used against the hull will permit sufficient water to penetrate it to set up all the conditions of corrosion just outlined. This type of oil film is particularly pervious to water exposure.

Such a paint interposes no bar to the complicated corrosion procedure, save the single bar that red lead used as a pigment opposes the solution pressure of the iron ions. But in the presence of a very wet film, and with considerable dissolved oxygen reaching even to the surface of the steel plates, there is an irregularity of bar against corrosion conditions and the steel plates will be found pitted. The formation of corrosion products beneath the paint surface acts to loosen the bond between paint and metal. The paint film, where thoroughly wetted, also develops weakness of bond even if corrosion has not yet set in.

Some of the newer alloys show what is apparently a repulsion to certain coatings. Special treatment of the surfaces of these alloys is necessary to secure bond. This is by no means a new phenomenon. Steel itself shows a similar effect. It is usually observed that an organic coating that has a high acid value tends to bond more firmly to steel. But to offset this, such acidic coatings, when moisture penetrates them, are more stimulative in producing corrosion than the neutral or alkaline coatings.

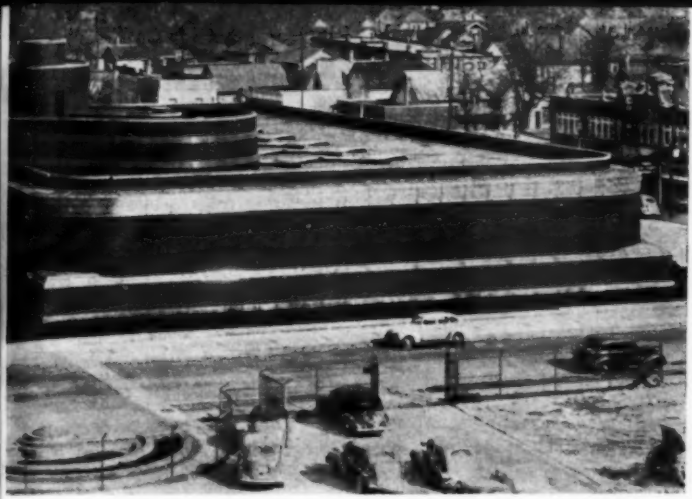
In general it may be said that the preparation of the surface to receive the finish used upon it has its own general formula. If conditions of exposure are not severe, the problem is probably easily solved; but where articles are to be used in the presence of highly destructive agencies much research work may have to be done, not alone on the preparation of surfaces but on the mechanical and chemical nature of coatings.

A Finish Manufacturer's

WHILE THE EYES of the world are focused on the "World of Tomorrow," as represented by buildings of ultra-modern design at the New York and San Francisco Fairs, there is another structure that may exert great influence on tomorrow's architects and builders. It is the new office building of S. C. Johnson & Son, Inc., at Racine, Wisc. Designed by Frank Lloyd Wright, the building was tailor made for the company. Mr. Wright calls it an architectural interpretation of modern business at its best.

The building is marked by many unique features. Built without windows or glass brick, it utilizes glass tubing for both natural and artificial light. Pyrex glass tubes are placed horizontally on racks, one on top of the other, with mastic joints between to form two streamlined bands encircling the building. The narrower of the two is at eye level; the wider band is at the juncture of roof and walls. Skylights in the areas between the circular column capitals which support the roof are constructed of this same glass tubing.

A striking feature is the simple repetition of hollow, slender monolithic dendriform shafts or columns standing on metal tips bedded at the floor level. These columns remind you of long stemmed golf tees. Authorities say they may revolutionize the use of concrete in columnar construction. Heretofore columns have been of the same diameter at the base as at the top, or of greater diameter at the base, thus occupying valuable floor space. These columns have a base diam-



New Office of Tomorrow

eter of only 9-in. and widen gradually to 2-ft.10-in. in diameter at the top, then spread to a diameter 18½-ft. The tallest columns, in the lobby area, are 31-ft. high; those in the main building are 21-ft.7½-in. high.

The building is fireproof, cold proof, sound proof and earthquake proof. A feature that has aroused widespread comment is the method of heating. Welded wrought iron steam pipes are laid in broken stone under the 4-in. concrete floor slab. The heat is controlled in six separate zones to synchronize with the sun's movements. The floor is actually a radiator. A temperature control system regulates the humidity and brings the temperature quickly to the degree desired in any part of the room.

Fresh air is drawn in at the top through two circular shafts 10-ft. in diameter. Outside air is drawn into the air-conditioning equipment and then circulated through ducts to all parts of the building.

Cherokee Red Walls

Special brick of a warm red-brown shade, known as "Cherokee Red," is used on exterior and interior walls. The walls consist of 3-in. cork in the center, asphalt-dipped; 1½-in. of concrete on both sides, and 2½-in. brick dovetailed to provide bond with the concrete on exterior and interior. The trim is Kasota stone of a color which compliments the color of the brick. On both the exterior and interior walls the mortar in the horizontal joints is raked out to give the entire building a flowing streamlined effect.

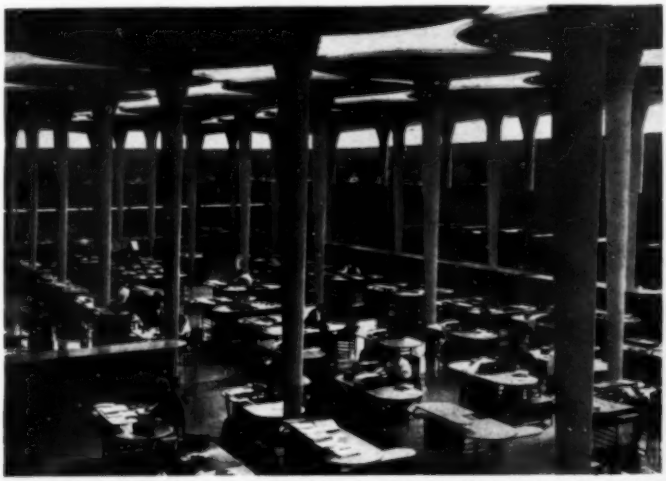
Instead of the usual procedure in the construction of an administration building, the entrance to this new building has been turned around to face its own covered parking area or "carport." The main building is set back from the street on three sides. Colorful landscaping will divide the main walls from the side walks. The roof of the carport serves as a playground for workers. Opening off the carport is a garage and service station.

The architect calls the two wings on top of the building, which house the executive offices, a penthouse. One wing contains the offices of the general manager and sales department executives; the other houses offices of the advertising and sales promotion departments. Placed between the two is the private office of the president, and opposite this is the long directors' room. Between the two is a well which looks down into the lobby of the building.

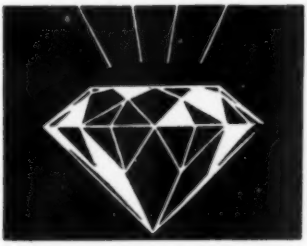
Special Furniture Installed

All the furniture was designed to fit the general scheme, with the result that the furniture is an integral part of the building. The desks are metal and walnut or maple. The pedestals and legs are steel; the tops and working surfaces are polished maple or walnut. Each general office desk is 7-ft. long; both ends of the desks are oval in shape and most of them have three working surfaces—that is, a ledge nearest the worker, a top or main working surface, and at the back of the desk, a shelf to accommodate papers, books, correspondence baskets and pigeon holes.

Every chair in the office is a 3-legged, circular back, circular seat, product of steel tubes and



View in general office. In the white areas, above, are double layers of glass tubing. Between these layers is electric lighting which is needed only on the darkest days.



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An executive's office in the new building. Notice the "work bench" practicability afforded by the new desks.

upholstery. The circular chair backs are swiveled between the uprights so that the backs rock back and forth to fit the curve of a person's back perfectly. Seats are adjustable backward and forward when a wing nut beneath the seat is loosened. To sit in these chairs one must be comfortable, for there is no chance to loll and lean back in bad postures.

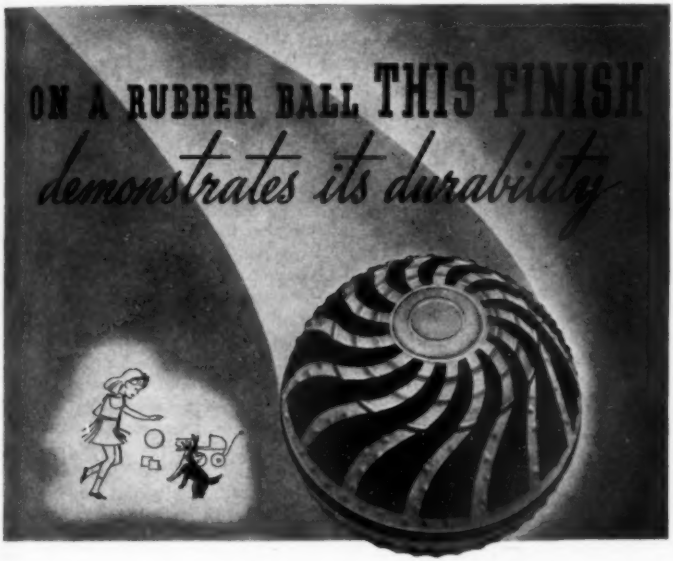
A special color scheme in the chair upholstery identifies the chairs of different departments. The credit department has red backed chairs; billing department, green back chairs; branch house records, blue back chairs; and the sales promotion department, beige upholstered chairs. Chair seats and backs are upholstered over cushions of specially molded foam rubber which quickly conforms to the contours of the body and provides a resilient cushion.

Work moves in straight lines; flows without interruption; related departments are near each other, and central departments, such as filing, are situated for convenience and facility to every department and to the employes.

A mezzanine gallery girdling the great workroom provides additional office space for special departments and workers. A theater, seating 250, for lectures, moving pictures and other entertainment, is located on the mezzanine level. Here, too, is a modernly equipped kitchen and facilities for preparing meals. An enclosed bridge connects the officers' quarters with a court for squash and handball above the garage.

Rest rooms and locker rooms are reached by convenient spiral stairways from the great workroom. Two automatic hydraulic elevators, circular in design, with cabs and enclosures of light metal grillwork, run from the basement to the penhouse offices on top of the building.

The cost of the main office building, including air-conditioning, furniture, landscaping, and all experiments and tests, was 92c per cubic foot. The cost of the entire structure, including the main building, carport, garage and recreational areas, was 80c per cubic foot. Although it is difficult to compare accurately costs of different buildings, it is



Stretch it, hammer it, Flex-Cote takes a beating with impunity . . . If your product on any surface requires a tough, beautiful flexible finish that will stand up under severe fabrication and sterilization, then Flex-Cote will show you a degree of service unapproached by any other product. Write for sample and advise if application is to be by spray, brush or roller.

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Give us your metal coating problem. We guarantee you an answer based on your conditions, and not just a standardized formula.

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believed that the cost of this extraordinarily beautiful structure, in spite of its many innovations, compares favorably with that of other fine modern buildings.

S. C. Johnson & Son, Inc., was founded at Racine, Wisc., in 1886 by Samuel Curtis Johnson, grandfather of the present head of the business, Herbert F. Johnson, Jr. The company manufactures wax polishes for floors, furniture and automobiles, and a complete line of paints and varnishes for both architectural and industrial uses.

Wrinkle Finishes

RECENT developments in wrinkle finishes have made this type of finish available in all colors, including pure white, light shades, and pastels, thus greatly extending its usefulness and increasing the number of products on which it can be appropriately used.

These new finishes are low in viscosity, so that they have greater covering power than the older types and can be applied with a uniformly fine grain. Good results are obtained by spraying on light, wet coats, using air pressures of from 8 to 10-lbs. for the fluid pressure, and from 65 to 70-lbs. for atomization. The pressure tanks should be equipped with air motors so that the uniformity of the material will be continuously maintained.

On exposure to air, these new finishes alter rather rapidly, so the quantities placed in pressure tanks should not exceed a few hours' supply.

For rapid production, these new finishes are made in quick-drying types that must be baked within 15 minutes after finishing, but where manufacturing conditions require it, slower-drying types can also be furnished. The baking schedule is one hour at from 225°F. to 250°F. Air-drying finishes can be supplied for users without baking facilities, but these are not usually recommended.

After baking, the coating is very hard and wear resistant. One coat is all that is needed if a single color effect is desired. Attractive results can be obtained by using bronze powders with the colored wrinkle enamel, and by coating sections, bands, or designs in contrasting colors of lacquer-enamels over a single color of wrinkle enamel. Scratches and spots are easily patched up by covering them with a brush or small touch-up gun and baking the patched spot with a radiant heater.

These new finishes are suitable for use on almost any kind of surface.

Editor's Note: The foregoing article is part of a talk given by Mr. G. Klinkenstein, Vice President and Technical Director of Maas & Waldstein Co., at the annual meeting of the Boston Branch of the American Electroplater's Society, held March 4.

Electric Mixer Bulletin

A new 8-page bulletin, printed in two colors, illustrates and describes the "Lightnin" line of side-entering motor-driven mixers manufactured and sold by Mixing Equipment Co., Inc., 1088 Garson Ave., Rochester, N. Y. Blueprints and cuts of many differnt types of installation are shown. A few of the company's portable top-entering mixing units (motor-driven) to fit any tank, are also illustrated and described.

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Bridges imperfections in metal . . .

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Saves costs in time and baking . . .

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For exterior or interior use . . .

Spray, dip, brush, or roller coat.

Further details of this exceptional undercoat gladly furnished upon request.

THE EGYPTIAN LACQUER MFG. COMPANY

ROCKEFELLER CENTER, NEW YORK

Finishing Coat Hangers

We are interested in a lacquer, enamel or even a stain finish that can be used in the manufacture of birch wood coat hangers. The finish we want is to be applied by dipping and when dry it must have a uniformly smooth and highly polished surface without any raising of the wood grain.

In our own experiments we have found that a lacquer sealer, with color and a small amount of thinner added, gives us good results. However, this dries so fast (12 minutes) that the finish does not get a chance to run off evenly, thus leaving quite a marked ridge along the bottom edges of the hangers.—W. Mfg. Co.

It has been our privilege to adapt a 1-coat or 2-coat lacquer system, as the occasion may require, to a number of small irregular articles such as handles, coat hangers, bowling pins, etc., and we have done considerable work along this line. It is, however, more or less difficult for us to make an exact recommendation without greater familiarity with the exact size and contours of the pieces you propose to finish. In general, we can say that we are quite sure you will find it possible to make a very smooth, tough and nice appearing finish with one dip coat of lacquer without any protruding tips or beads.

Rather than go into a detailed description of the material and process, we would much prefer that, if convenient, you forward us a few of the pieces you propose to finish. Upon receipt of these pieces we will be glad to finish them in a 1-coat lacquer system and return them to you for your inspection and comment. If you care to permit us to demonstrate this finish in this way we will be very glad to tell you exactly how it is done and explain methods which we believe will afford you a satisfactory and economical finish for these pieces.—ROXALIN FLEXIBLE LACQUER CO.

For many years we have supplied dipping varnish to a maker of high quality pants and skirt hangers and we can unqualifiedly recommend this material to you. We call it SN-0201. It reduces with V. M. & P. naphtha which you can buy locally.

With respect to the relative merits of varnish and lacquer, the answer is entirely dependent upon what time and space is worth to you. On a straight cost per square foot of coverage calculation, disregarding the time and space elements, varnish will cost you about one-half as much as lacquer. The lacquer film is tougher but less "full". We can furnish both materials for the purpose.

If you are going to use lacquer, we suggest a dull one, because lacquer does not cover surface imperfections well and such imperfections become more and more evident as the luster is elevated.

For your tumbled wax finish, we suggest using a mixture of ground carnauba wax and coarse hardwood sawdust in a wood bar-

Questions Answers

if you are finishing

FURNITURE NOVELTIES DISPLAYS
or other wood articles in which
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Berry Brothers Multiform gives two or three color effects at no extra cost and in beauty and originality far surpasses ordinary single-color finishes. It eliminates the need for striping, stencils, decalcomanias and spraying edges.

Multiform lifts the product from the commonplace . . . gives it that air of quality and distinction which spotlights it on the showroom floor and pulls attention and sales. Records show that Multiform finishes, even when higher-priced, out-sell ordinary one-color finishes. Covers like enamel, looks like porcelain.

Write or wire for Multiform color book and prices.

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rel. Avoid the use of oxidizing oils in connection with this operation because of the danger of spontaneous combustion.—ROLAND W. INGLIS.

It is our suggestion that you try finishing these wood parts with a clear tumble finish combination . . . for example our No. 3043 Clear Tumble Base and No. 3045 Tumble Polish, which can be used for producing the wax effect you desire. We are sending you a booklet which gives further detailed information on the procedure that should be followed.—ZAPON-BREVOLITE DIVISION.

Sandblasting Wood

Have you ever heard of sandblasting on wood? This is a new process of finishing wood and we have been approached by one of our customers to use this process on one of their articles. You may be able to name a concern that deals in the equipment used for sandblasting.—W. W. Co. (Novelties; Wood Specialties).

Sandblasting, with or without stencils, is not new as a method of producing various decorative effects on wood surfaces. Several articles on this subject have appeared in past issues of INDUSTRIAL FINISHING. Improvements have been made, of course, in the equipment and technique to give added variety to what can be accomplished economically. For example, commercial abrasives that are sharper, harder and more effective than ordinary sand are generally used. Among these are silicon carbide and crystallized oxide of aluminum.

The wood surface to receive a stenciled design may be sandblasted before or after a clear or colored finish has been applied, but usually the wood is sandblasted in the white and coated afterward. The force of the many grains of sharp abrasive, driven by compressed air against the wood, etches the surface—cuts away the softer portions more and leaves the hard grain standing out in sharp relief, while the parts covered by the stencil remain untouched. The process has many possibilities. We are sending you the names and addresses of a few manufacturers of sandblast equipment.—ED.

In former years we supplied a number of complete sandblast outfits for graining wood and have, therefore, had some experience along these lines. If you will tell us the size of the pieces you wish to etch or grain, and the nature of the wood—or better yet, submit a small sample of the wood, we will be in a better position to give you some performance figures.

The customary equipment includes a sandblast room, operator's protective curtain, along with a direct-pressure sandblast machine. The sandblast room measures approximately 8-ft. long by 5-ft. deep by 7½-ft. high, and can be connected to your present exhaust ventilation. The ventilation should be at least 1650-cu.ft. of air per minute for this type of room, as there is silica dust to be removed at the rate of five air changes per minute.

For general etching or graining of the wood surface, nothing else is needed. However, if designs of any kind are to be placed on the

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A SALES APPEALING, economical finish specially suitable for those who lack baking facilities . . . . for those who want quick set for easy handling, and overnight drying . . . . for the company who wants to get its goods out in 24 hours, no longer. Some of the outstanding advantages are:

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- **Has Extreme Adhesion, Hardness, Flexibility, Mar-Resistance, Outside Durability.**
- **May Be Sprayed, Brushed or Dipped.**
- **Comes in Colors, White, Black and Clear.**

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Boston Chicago

wood surface, a heavy rubber mask or templet is needed, cut out by an electric tool to your full sized blueprint. We do not have such stencils but can put you in touch with a very competent source of supply.

In addition to the sandblast machinery, stencils, etc., and ventilation, you will need an air compressor. This compressor should have a minimum displacement of 110-cu.ft. of air per minute at 80 to 100-lbs. pressure, driven by a 20-h.p. motor. You may already have air capacity available . . . —RUEMELIN MFG. CO.

Rubbing Compound for Lacquer Finishes

After publication of the article entitled "Rubbing Formula for Lacquering Surfaces," in May 1939 issue, page 32, INDUSTRIAL FINISHING received several inquiries for products and supplies mentioned therein. Investigation revealed the fact that the Phenoid Rubbing Compound, specified by the author, is a product of a chemical company in Newark, N. J. It is used for smoothing down and polishing lacquer finishes; cuts similar to sandpaper, with minimum of effort, but does not leave as pronounced marks.

Two compounds are made under this name. One, No. 125, can be used with or without water and by hand or with a rubbing machine. The other, No. 10, is for use with gasoline or kerosene, for hand rubbing only.

For finishers who are not familiar with the method of using rubbing compounds, the company suggests the following procedure:

Make a pad out of soft rags. Apply the compound to the pad. Do not use too much at one time. While the compound remains moist on the pad it will cut. When it starts to pack and dry, then it starts to polish. If using No. 125, either moisten the pad with water or apply the compound to the pad as it comes in the can. For the No. 10, the cloth must first be moistened with kerosene if the surface is rough and requires quite some cutting down and a longer rub, or moisten with gasoline for a shorter rub.

In order to obtain a finer finish with a high luster polish, give the surface a final but similar treatment with Phenoid Cleaner and Polish.

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try to scratch or mar it!

Here is a lacquer finish that cannot be marred or scratched with the thumbnail, or other destructive agencies — a much tougher piece of goods than the ordinary lacquers. It produces a splendid transparent finish of full depth on maple, walnut, gum, mahogany and other cabinet woods.... It is made in either the Clear Gloss Rubbing or the Satin Finish. Mar Proof Lacquer Sealer is recommended for first coat.

THE SCHAEFER VARNISH COMPANY, INC.
Louisville, Kentucky

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Fillers
Primers
Enamels
Thinners
Pencil Lacquers
Cable Lacquers
Wood Lacquers
Metal Lacquers
Silver Lacquers
Textile Lacquers
Maintenance Paints
Automotive Finishes
Machine Tool Finishes

The Emblem of Quality in Finishes

The above list is by no means complete, but we trust it will serve to give you an idea of the extent to which WALKER'S chemical staff has solved problems submitted to it.

H. V. WALKER CO.
ELIZABETH, NEW JERSEY

FINISHES To Fit the Product

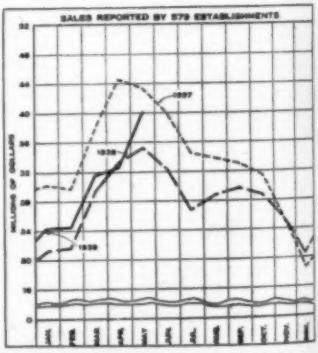
New England Warehouse
BROWN & DEAN CO., Providence, R. I.

Metal Cleaning, Burnishing, Pickling

Valuable information and interesting pictures are included in a new 24-page book on the subject of washing, rinsing, drying, burnishing and pickling. Pages 8½x11-in. are bound between heavy paper covers in orange and black. Many illustrations of the application of custom built equipment are shown, as well as standard installation in well known plants of automotive, electrical, radio and other metal working industries. To those who write in on their company's business stationery, the book will be sent free by N. Ransohoff, Inc., 234 W. 71st St., Cincinnati, Ohio, manufacturers of machinery for performing the operations mentioned.

Dictionary of Scientific Terms

To give readers of trade journals, magazines, newspapers and books, quick and accurate reference definitions of the latest technical words and scientific terms used, the author, Mr. C. M. Beadnell, has compiled this 235-page book. He has selected those particular terms most likely to call for inquiry on the part of general readers. Abbreviations, symbols and signs are given; also cross-references, synonyms, and antonyms. This 1939 book is bound substantially in a dark blue stiff cloth binding, lettered in gold, and priced at $3.00 by The Chemical Publishing Co., 148 Lafayette St., New York, N. Y.



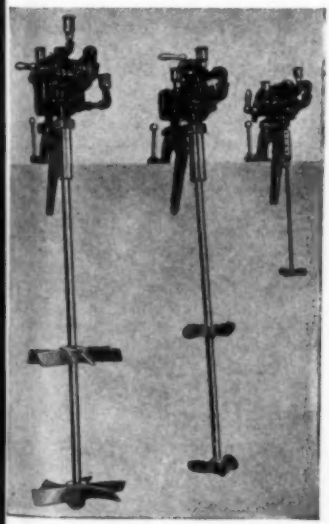
This U. S. Dept. of Commerce chart shows the total volume of sales of paints, varnishes, lacquers and fillers, by months, for 1937, 1938, and 1939 as reported by 579 establishments in the United States.

Material Agitators

Air-motored agitators or mixers are safe to use on inflammable and explosive materials, as they are spark-proof and they produce no heat. Throttle control of the air intake governs the speed of the mixer so that any speed from a few turns to as many as 6000-r.p.m. can be obtained.

In the line of Pneumix air-motored agitators, manufactured and offered by Eclipse Air Brush Co., Inc., 390 Park Ave., Newark, N. J., there are several sizes of clamp-type mixers like those shown in the accompanying cut. These are the direct drive series. The largest one, at the left, is fitted with an 8-in. turbo-type up-thrust propeller at the bottom, and a turbo-type down-thrust propeller at a point near its mid-length. These propellers are made of aluminum or bronze.

The mixer in the middle is fitted with two boat-type propellers, one



Three sizes of air-motored agitators.

an up-thrust and the other a down-thrust. The smallest mixer has only one small propeller. It is small enough to use in a 5-gal. container.

The design of these agitators is simple; the construction durable, fool-proof and time-tested. Each one is fitted with an exhaust muffler to insure quiet operation.

New...

MATERIALS SUPPLIES EQUIPMENT

Blue Dye for Leather, Wood, Paper

A new spirit-soluble color, "Luxol" Fast Blue MBS, for making transparent lacquers and spirit printing ink colors, is announced by E. I. du Pont de Nemours & Co., Wilmington, Dela. In alcohol solutions it may be used for coloring leather, paper, celluloid and wood. The dyestuff produces bright greenish shades of blue. It is equal in strength to "Luxol" Fast Blue AR and "Luxol" Fast Blue G, but is much greener and brighter, and possesses better fastness to light than either of these dyestuffs.

New Tack Cloth

The A. Shelburne Co., 739 Ceres Ave., Los Angeles, Calif., announces "Shel-Tack", a new type of tack cloth based on an entirely new formula . . . the result of over 18 months experimentation and research. The company states that:

"In developing Shel-Tack, our aim was to eliminate the traditional technical difficulty with commercially-made cloths—the presence of wax

FORM-A-ROC

We offer to all industries equipped for baking finishes this highly perfected, heat-converting, synthetic enamel.

FORM-A-ROC

We have combined to an optimum degree the necessary qualities of tremendous hardness, great adhesion, smooth lustrous gloss, and freedom from haze, discoloration and wrinkling.

FORM-A-ROC

Baking schedule is of great flexibility, permitting from 5-50 minutes at 250-375° F.

FORM-A-ROC

No matter which of the present worthy finishes of this type you may be using or planning to use we sincerely recommend that you investigate

FORM-A-ROC

MADE BY

THE VARNISH PRODUCTS CO.

5208 Harvard Avenue

CLEVELAND, O.

bases. The presence of wax (usually beeswax) in a tack-cloth offers the very definite possibility of leaving wax smears on the surface to be sprayed. Such smears prevent the finish from adhering, and eventually cause blistering.

"Further, the presence of wax causes the cloth itself to 'set-up' and become hard after a short period of exposure to air . . . or often while still in the packing carton. Large industrial firms who buy these in quantities, find themselves obliged to heat cloths which have been on hand a few weeks in order to make them sufficiently pliable to wipe a surface. This entails a waste of time and labor, and may cause a fire hazard."

Shel-Tack cloths contain no wax; they are packaged in cartons.

Portable Belt Sander

A new streamlined 3-in. belt sander—the "Zephyrplane" has just been announced by Skilsaw, Inc., Chicago, Ill. It is a perfectly balanced tool that provides uniform pressure over the entire sanding surface; light in weight and easy to handle; has an interchangeable knob handle that can be moved from the top to the nose of the sander for

The machine weighs only 12½-lbs.

greater convenience in sanding vertical surfaces; has a "touch-control" lever that instantly releases tension on the sanding belt to permit of quickly changing belts; a pressure control trigger switch that makes accidental starting impossible. Smooth running is assured by ball bearings on armature and transverse shaft; Oilite bearings are used on the idler and driven pulleys. A belt speed of 1200-ft. per minute assures rapid sanding and produces a smooth even surface without ripples or ridges.

Improves Acid Pickling Baths

The American Chemical Paint Co., Ambler, Pa., announces a control chemical or inhibitor called "Rodine" which, when added in small quantities to pickling baths, effectively retards the attack of acid on the steel without retarding removal of oxide scale or incrustation of rust, lime or silica. Rodine is not a pickling acid; small quantities of it control large quantities of acid pickling solution. Other advantages claimed for the use of Rodine in pickling baths include: Clean metal is not wasted in pickling; acid is not wasted in destroying good metal; a given amount of acid will clean more metal; acid baths need renewing less frequently; smooth bright clean surfaces are produced; the metal is not pitted; the tendency of the metal to rust is reduced; etc.

Portable Sanding Equipment

For greater convenience to users of Sterling Speed-Bloc sanders, The Sterling Products Co., 2457 Woodward Ave., Detroit, Mich., has developed the new portable unit illustrated here. This unit includes a tray mounted on casters, and uprights and fittings which enable the user to mount the whole outfit as

Put that Striking Finish On!

CLAREMONT FLOCKS

COTTON — WOOL
RAYON

Any article sprayed with CLAREMONT cotton, wool or rayon flocks is so much more attractive that it commands a better price and sells faster — yet the cost is increased less than the mark-up that can be made for improved appearance of the article.

Used on

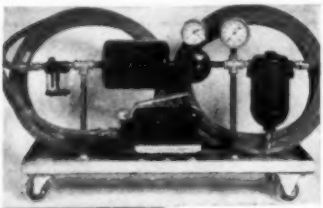
SIGNS — DISPLAYS
MIRRORS — NOVELTIES
BOXES — WIRE PRODUCTS
CLOTH — PAPER

— for best results use the best flocks made.

Write for Samples.

CLAREMONT WASTE MFG. CO.
CLAREMONT, N. H.

The country's largest manufacturers



More handy to use anywhere in the shop.

a portable unit for convenience in using the equipment anywhere in the plant. Space on the tray can be used for small tools, wiping cloths and abrasive paper, which will save time on the part of the operator as well as bring the air controls within easy reach regardless of where the work is being done in the shop. The company also offers a unit that can be mounted in a fixed position on the wall or ceiling.

Ultra Ray Pearl Essence
(always MORE brilliant)
Produced by
EDWARD I. PETOW & SON
Originators of
American Pearl Essence
Ultra Brilliancy!
Ultra Quality!
Ultra Durability!
HYANNIS, MASSACHUSETTS

Clear Furniture Finish for Fast Schedule

A new product known as "Dulux" Clear Furniture Finish, which combines the speed and quality of lacquer with the build of varnish, is announced by E. I. du Pont de Nemours & Co., Wilmington, Dela. Designed to dry at elevated temperatures, this new material offers finishing schedules — from sealer to packing—ranging between 5½ to 7½ hours at 150°F. as compared with the usual 22 to 28 hours schedule for air-drying lacquers and the 29 to 43 hours required for varnishes.

Having a build which necessitates only one coat, it effects a considerable economy through a saving on material and the time required for preparation and application of a second coat. Also, it flows as easily as varnish and deposits a film possessing excellent depth of appearance.

The new finish gives furniture greater retained beauty and is resistant to yellowing, darkening, and alcohol spillage. In addition, its resistance to water, scratching, cold cracking, and printing is comparable to lacquers and superior to varnishes.

Finish for Dipping Racks

"Unichrome" Rack Coating-W is a new rack coating material developed by United Chromium, Inc., 51 E. 42nd St., New York, N. Y. This material is used for coating plating racks of all descriptions and is not affected by boiling cleaners or by plating solutions. The coating contains no ingredients which are in any way harmful to any cleaning or plating bath into which the coated rack may be introduced.

The material is white in color so that any uncovered portions of racks may be readily seen. It does not blister or crack, and many racks coated with this material have stood up without any signs of deteriora-

tion after months of continuous use in the plating cycle.

Recommended procedure for coating racks is to dip the rack in "Unichrome" Rack Coating-W, each coat being subsequently force dried at a temperature of about 200°F. The drying operation after each coat requires about one hour. Ten coats are usually applied.

Portable Electric Sander, Rubber

The Easy Electric Sander, a portable all-electric reciprocating motion sanding, rubbing and polishing machine, is introduced by the Detroit Surfacing Machine Co., 7433 W. Davison, Detroit, Mich.

It is adaptable to a wide range of new and refinishing applications on flat, curved and irregular surfaces—sanding, rubbing or polishing —from the finest precision work to roughest castings. On wood, metal, bakelite, granite, slate, leather, or composition surfaces . . . primer, surfacer, or sealer coats, shellac, varnish, lacquer, enamel and other materials.

Takes power from electric-light socket.

A GOLD SILVER or COPPER *finish* will improve your product

High in Quality Low in Cost

Request samples today

The Mitchell-Mayer Co.
ST. LOUIS, MO.

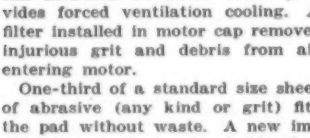
GRAINING PLATES
bring out the QUALITY *you have built in*
YOUR PRODUCT

AMERICAN ELECTROTYPE COMPANY
104 E. MASON ST.
MILWAUKEE, WIS.

Perfect balance, light weight, comfortable grip, convenient switch control and smooth reciprocating motion insure easy one-hand operation on horizontal or vertical surfaces.

Ample power is furnished by a sturdy, ball-bearing, Universal motor, operating from any A. C. or D. C. electric light socket. Every moving part runs in grease-packed and grease-sealed precision selected ball bearings. Ball-bearing thrust, with inner and outer races press locked in place, eliminates drive shaft shock in all directions. Large fan mounted on motor shaft provides forced ventilation cooling. A filter installed in motor cap removes injurious grit and debris from air entering motor.

One-third of a standard size sheet of abrasive (any kind or grit) fits the pad without waste. A new improved type of abrasive holder has been developed which holds the abrasive paper tightly on the sanding pad, thus eliminating loss of cutting action commonly experienced when abrasive paper is loose on pad. From one to several pieces of paper can be quickly and securely attached at one time.



MAGIC TACK RAGS remove specks, lint and sand particles--- bring out that deep, smooth luster, produce a faultless surface for white or colored finish. Why use "home made" tack rags when you can buy MAGIC TACK RAGS at trifling cost! They are tackier, do not dry--- are dust-proof and spontaneous combustion proof. Packed in dozen and gross lots or more. Made only by the

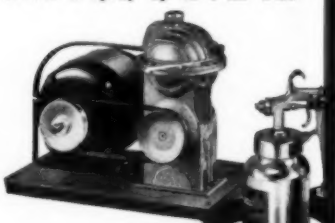
Wm. A. Juergens Co.
4036-40 Lagrange Street,
Toledo, Ohio, U. S. A.
If your dealer does not carry Magic Tack Rags, write us for sample.

Portable Spray Rig

The Electric Sprayit Co., 220 N. Broadway, Milwaukee, Wisc., announces Sprayit Series No. 200 portable paint sprayers. The units are compact, portable and combine high efficiency with low cost.

The compressor is mounted on a heavy sheet-steel base, fitted with rubber bumpers, and is V-belt driven by a ¼-h.p. electric motor. If desired, the unit can be furnished without a motor. This compressor is of the diaphragm type, which seals off the crankcase from the cylinder head, and thereby prevents any contamination of the compressed air by oil. The diaphragm is made of Neoprene, firmly backed by fabric in a cord construction. Displacement of compressor is 2.55-c.f.m.; spraying pressure on the spray gun is over 30-lbs. Operation is smooth and vibrationless, and the compressed air is free from pulsations.

The spray gun is of the pressure-feed internal break-up type, and is fully adjustable; gun body and removable cover are made of die-cast aluminum; aluminum container is of one-quart capacity; spray gun will deliver a spray up to 8-in. wide.



Handy for maintenance work, product finishing and refinishing.

Three internal-mix spray nozzles, for round, fan, and angle sprays, are furnished with the gun, all nozzles and the fluid tip being made of case-hardened steel.

Zinc Chromate Primer

The Hilo Varnish Corp., 42-60 Stewart Ave., Brooklyn, N. Y., announces the release of Hilo's new zinc chromate primer, especially suitable as an undercoat for all kinds of oil-base or synthetic paints and enamels . . . . for all kinds of metal work, exterior and interior. It can be applied by brushing, spraying or dipping.

Quick Metal Cleaner

Here is an entirely new product that cleans by chemical action; no rubbing required; not an abrasive; not a polish; leaves no powdery deposit in cracks and corners. This metal cleaner removes, in one second, grease, stains and tarnish from copper, brass, bronze and other metals except aluminum and zinc. It will not harm the most delicate surfaces. Apply a thin coat with a brush and wipe it off at once with a wet rag. It will not etch or harm the metal in any way, even if permitted to dry on the surface; cleans crevices that are inaccessible to ordinary polishes; a product of Rapid Electroplating Process, Inc., 1414 S. Wabash Ave., Chicago, Ill.

Light Spray Gun

Binks Mfg. Co., 3114 Carroll Ave., Chicago, Ill., announces a new streamlined spray gun for lighter work—to fill a definite need in the products finishing field. In design the gun is an outstanding improvement, introducing modern streamlining in a spray gun.

Other features include: Better atomization and better control, interchangeable nozzles, less pressure drop, and less air consumption. The control for the amount of material is conveniently placed at the back of the gun, while control of the width of spray is by a knurled screw just back of the modern one-piece nozzle head.

Streamlined in design; improved in utility.

Baked Enamel Stripper

The Enthone Co., 442 Elm St., New Haven, Conn., announces the development of Enthone Baked-Enamel Stripper for rapidly removing high-baked synthetic enamels from all types of base metals, such as megnesium alloys, zinc-base die castings, aluminum, steel and molded plastic products without etching or attacking them. It is claimed that these base metals, after stripping off the enamel, are left clean and bright without deposition of pigment or etching, such as results from the use of caustic stripping solutions. The stripper is said to be non-caustic, is used diluted with three parts water by volume, and completely removes the enamel in from one to three minutes.

The manufacturers state that Enthone Baked Enamel Stripper has been in industrial trial use for over a year.

Industrial FINISHING

Distributed to Executives and Foremen Finishers in industrial plants where finishing coats are applied with finishing equipment.

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EDITORIAL

Selection of Finishing Methods; Materials

Stressing the constant progress that is being made by both the manufacturers of industrial finishes and manufacturers of finishing equipment, Mr. G. Klinkenstein, vice-president and technical director of Maas & Waldstein Co., Newark, N. J., discussed modern finishing methods at the International Convention of the American Electro-Platers' Society, held at Asbury Park, N. J., June 20 to 22.

"The problem of selecting the method that will satisfactorily finish a given product at the lowest unit cost is by no means a simple one," said Mr. Klinkenstein. "A large number of variable factors is involved, and the wrong answer may mean high costs, inferior results, and, perhaps, a wasted investment. Hence, each case should be carefully analyzed before the finishing method is selected."

Among the factors affecting the choice of a finishing method for a metal product, the following were named by the speaker: Quality of finish desired; character of finish; number of colors desired; size, shape, and weight of product; volume of production; finishing facilities available; and method of material handling required.

To aid in selecting the finishing process to use under given conditions, Mr. Klinkenstein outlined the applications for which the following methods are best adapted —brushing, roller coating, tumbling, centrifuging, manual and machine dipping, gasket coating, manual spraying, and automatic spraying.

He pointed out that most products can be finished by dipping or spraying but that some other method may be more economical under a given set of circumstances. The low cost and high speed of roller coating or centrifuging where these methods are applicable are cases in point, he stated.

Mr. Klinkenstein also emphasized the need of selecting a finish that is designed for the finishing method to be employed. "The finish has become as much a part of the finishing machine as any mechanical member of it and must be as carefully designed. To use the wrong kind of finish may result in disaster," he said.

New Foreman Finishers; Where Do We Get Them?

One of our friends—a former foreman finisher who now sells finishing materials — w o n d e r s where industrial establishments will get new experienced foreman finishers to replace the old ones who are disappearing from the scene. Quoting from his letter:

"Foreman finishers are not being made today. In the old days there used to be such a thing as an apprentice or a sub-foreman — straw boss, we used to call them. What's become of them? They are lost in the swing of production. Manufacturers will not allow the overhead involved in training bright young men to qualify as foremen.

"A man who is supposed to be a sub-foreman today is just some dub who can be picked up cheaply and used by the foreman as a hustler. Instead of taking him in hand and teaching him to mix colors and putting him through the paces on all operations, so he can become a well trained expert on all of them, the foreman is obliged to keep him busy at production, i n s p e c t i o n or maintenance work. H e i s n ' t being trained to step up to a foremanship job when the other man dies or leaves.

"A foreman finisher can not get his knowledge from a book, nor can he get it in college. He is able to get some knowledge from books and magazines, but he must have actual working experience to become qualified to handle a foremanship job. There is a time coming when expert finishers are going to be in big demand, and it is not far off."

Here is something for industrial concerns to t h i n k about. Men competent to assume the responsibility of being real successful foreman finishers must be developed and trained in the factories that employ them. The job is highly important and it is really not an extravagance to have in the finishing crew at least two men qualified to serve as foreman. Then the man who is acting as foreman will be on his toes to produce maximum results.

Camouflage Paints

Another job for paints to perform—a use which may call for enormous quantities of paints and paint-applying equipment — is to provide durable non-glint coatings that will camouflage or blackout the tops and other exposed surfaces of important buildings, bridges, highways and transportation units in areas likely to be bombed by e n e m y air raiders. European countries close to danger zones are giving serious consideration to this matter of camouflage and are prepared to go ahead with the work on a large scale. Special paints and color effects have been developed.

In a full-page advertisement headed "Paints for Camouflage and Blackout," in a paint journal published in London, England, the manufacturer s t a t e s that, "the importance of camouflage and blackout in any scheme of aerial defense is emphasized by the Civil Defense Bill . . . . Paints must obviously play an essential part in any scheme of c a m o u f l a g e, and consideration must be given to the following points: 1) Freedom of glint; 2) color; 3) durability; 4) storage properties (if the paint is to be

held in stock against an emergency)."

It is earnestly hoped that no emergency will arise which may call for extensive camouflaging of any structures in the U. S. A.—or in countries friendly to us—but knowledge of these materials and of facilities for making and using them in large quantities are measures of preparedness which must not be ignored.

Furniture Buying; Attendance at June Market

According to reliable information about the combined Spring and Summer Furniture Exhibition, held at the Chicago Furniture Mart, June 5 to 17, business booked by buyers attending the market the early part of the first week equalled, and in some instances exceeded, all-time high order established in the summer of 1937. This was taken to indicate that buyers were in need of merchandise and filling definite holes in their inventory, and it was generally felt that under normal market conditions business might have been the best in the history of many of the manufacturers.

Buyers from rural areas were unable to make committments since, the market being a month early, they were in no position to know how crops might be this season. Buyers from small stores were unable to leave their shops due to retail business which is usually good during the month of June. The fact that attendance fell off sharply toward the end of the week indicated that buyers were rushing through the market, placing necessary orders, and then hurrying back to their stores to be on hand for business.

Thus the June market took on much of the aspect of a spring market with case goods and occasional furniture receiving the most attention, as buyers secured merchandise for August sales.

Manufacturers cooperating with the dealers, promised July deliveries, indicating that many factories were warehousing larger stocks than heretofore and that their production schedules were keyed to 30-day delivery requirements.

By the close of the first week attendance showed a 27% decline under the January market and a 6% decline under the 1938 market. Particularly noticeable was the lack of attendance of small stores, and buyers from farm and agricultural areas. Total attendance at the close of the two-week market, according to preliminary tabulations, showed a total of approximately 8400 as against 10,916 buyers in January, and 9072 in the summer of 1937.

"It was a fine experiment and we're honestly glad we tried it, for now we are convinced that none of the four normal markets can be omitted without working an inescapable hardship upon many branches of the industry." This was the consensus of opinion of the majority of manufacturers and dealers who participated in the first combined spring and summer national home furnishings show. The combined date was established by the Board last January in order to meet the wishes of a large majority of the industry for a reduced number of markets.

Significant is the fact that at the close of the first week, the

Board of Governors, made up of some 30 tenants of the American Furniture Mart, voted practically unanimously to return to four markets a year—to be held in January, May, July and November. The dates of Oct. 30 to Nov. 4 were set for the next fall market, and Jan. 8 to Jan. 20 for the next winter market.

Letters from I. F. Readers

(Continued from page 9)

you kindly give us the addresses of those who manufacture these paints? —M. R. Co. (Lighting Equipment of Wood Fiber).

Names and addresses have been submitted on this. Many inquiries are received for luminous paints.—ED.

Infra Red Drying

A short time ago one of my accounts called my attention to an article concerning a new drying lamp made by General Electric, and its applications, which appeared in your publication. I am very much interested in the possibilities of this lamp and therefore would like to have the information you published. I will appreciate it if you will let me know how I can get this information.—C. F. C. (Graybar Electric Co.)

We are sending you March 1939 issue of INDUSTRIAL FINISHING, which contains articles on this subject—see pages 44, 46, 48 and 53. Another article about infra-red drying is promised for publication in an early issue.—ED.

I have your letter of June 14 to Mr. H. T. F. who has asked me to prepare an article on infra-red drying for your magazine, INDUSTRIAL FINISHING. I shall be very glad to write an article such as you describe in your letter . . . From the correspondence that you have had with Mr. S. C. T., I gather that you ran an article on the subject of infra-red drying recently. I wonder if you could send me a copy of this article so that in preparing the material, I will be able to avoid duplication?—L. M. J.

Gelatin Rollers

We are writing to inquire if you can furnish us with any detailed information or formula for making the gelatin material which is used on the paint rollers in roller coating. We would also like for you to tell us what type of paint is used to cover the cores before the above mentioned gelatin is cast on the rollers.—V. B. Co. (Mfrs. of Distinctive Venetian Blinds).

We are not in position to furnish any formula for the manufacture of gelatin rollers.—ED.

Annual Sales of Paint

We should like to obtain the best available information as to the value, in millions of dollars, of the paint sold annually in the United States, and the percent of this total used in the painting of structural steel. We shall appreciate very much any information which you can give us on this subject. If statistics are not available, we shall be glad to have an estimate.—M. U. (Institute of Industrial Research).

According to the U. S. Department of Commerce, Bureau of Census, Washington, D. C., the total sales of finishing materials reported by 680 establishments, in the year 1938, amounted to nearly 348 million dollars. We do not know what percent of this was used for painting structural steel.—ED.

Paint Spray Exhaust System

About three years ago I noticed an article in INDUSTRIAL FINISHING showing the figures involved in the design of an induced-draft exhaust

HOT LACQUER UNIT

Complete with circulating pump, thermostat, thermometer, pressure maintaining valve, gauges and control switches; fully automatic. Portable.

M. & E. MANUFACTURING CO.
720 S. Meridian St., Indianapolis, Ind.

system for paint spray booths. I am not able to lay my hands on this article at the present time, and would be pleased if you are able to advise me the issue of your magazine covering this article.—N. Mfg. Corp.

Perhaps what you have in mind is a ½-page display advertisement on the Garden City Fan Co's. ejector blowers, piping and accessories, which appeared in May 1937 issue, page 78.—ED.

Briar Pipe Finish

In your April 1939 issue, page 8, one of your correspondents asks several questions relating to finishes suitable for finishing briar wood pipes. Would you kindly supply us with similar information, as we have been approached by a local manufacturer for this?—C. I. R., So. Melbourne, Australia.

A well-informed man has promised to prepare and send in an article on this subject for publication in an early issue of INDUSTRIAL FINISHING. In the meantime we are sending you names of manufacturers who can probably supply finishing materials suitable for the work you have in mind.—ED.

Imitation Plating

Kindly furnish us names of manufacturers of dyes used in spraying or dipping metal parts to give the appearance of plated finishes.—S. C. Co. (Caskets).

Can you give me the names and addresses of manufacturers making chromium pigment for use in making "Paint Like Chromium"?—C. H. F.

Paint and Air Hose

Will you please let us know the name of the manufacturer of the Twin Paint and Air Hose joined by the "Siameez Web", as shown in February 1939 issue, on page 55?—N. S. Co. (Spray Painting Equipment).

This is a product of Binks Mfg. Co., Chicago, Ill.—ED.

Minwax Floor Finish

We are informed that Min-Wax makes a very good finish for pine floors. What is your opinion? Would you also furnish us with the address of the manufacturer of Min-Wax?—H. Furn. Co. (Cedar Chests, Bookcases and Desks).

The product Minwax has never been advertised in INDUSTRIAL FINISHING, and we are not familiar with its merits. According to directory information, it is a product of Minwax Co., Inc., 11 W. 42nd St., New York, N. Y.—ED.

Finishes on Stone

On page 65 of April 1939 issue, there is an inquiry by the O. Marble Corp. about finishes on stone. We would appreciate the address of this firm as we may be able to put them in touch with a chemist who has investigated this field quite thoroughly. —The Mearl Corp.

Spraying; Degreasing

We are in the midst of compiling a folder dealing with metal cleaning, fabric cleaning and the use of mineral spirits as a reducing solvent.

TRIAL SET $2.00 . . for
Testing and Controlling Viscosity by the Bubble Method

Descriptive folder on request.

R. P. CARGILLE, 118 LIBERTY ST.
Dept. T NEW YORK CITY

METALPREP
"Used First, Makes Your Paint Finish Last"

- **REMOVES** Rust, Oil and Grease
- **ETCHES** the Metal
- **MAKES** Paint Adhere

The complete metal cleaner for Iron, Steel, Aluminum, Aluminum Alloy, Galvaneal, Galvanized Iron, etc. Provides a firm bond and insures long life to finish coats.

Write for Literature Today

Neilson Chemical Co.
6864 BENSON ST. DETROIT, MICH.

Australian Representatives: Hardie Trading Pty., Ltd., Melbourne

Would it be possible for you to lend us photographs showing the spraying of paint with a spray gun, the dipping of metal parts (degreasing) and also photographs showing a painter mixing paints with the aid of turpentine or spirits?—G. Oil Co.

Photographs have been sent.—ED.

Awning, Canvas Paint

As a result of the inquiry published in June issue, page 5, we are informed that the Commerce Varnish Co., Brooklyn, N. Y., offer a product called "Canvasol", in eight standard colors, for finishing new and old canvas surfaces which are exposed to the weather . . . sunproof, fadeproof, waterproof, flexible.—ED.

Finish for Cellulose Acetate

Will you please give us the names and addresses of paint or lacquer manufacturers who have successfully developed a finish (transparent and pigmented) for Cellulose Acetate (Tenite, Lumarith, etc.) This information is to be used with regard to finishing injection molded articles molded from cellulose acetate.—P. & T. Co.

Mahogany Stain Sealer

On page 63 of your April issue we notice a published letter signed by Carpenter-Morton Co., in reference to a sealer for mahogany acid stain. We are interested in getting a sample of this.—E. Furn. Co.

Classified Advertising

Rate: 45 cents per line per insertion—minimum $1.35

INDUSTRIAL SALESMANAGER.

An Ohio Corporation doing a strictly Industrial business in Paints, Varnishes, Enamels, Stains, Fillers and Lacquers, has an opening for a capable and experienced salesmanager—willing to do field work—not over 45 years of age. Real opportunity for the right man. Address IF-748, care Industrial Finishing.

PEERLESS SPRAY BOOTHS

—highest efficiency at prices can not be equalled. INDUSTRIAL EQUIPMENT CO., 208 N. Wells, Chicago.

FINISHING FOREMAN

Desires new connection. Will go anywhere, but central section preferred. Young man with ten years' experience, six years as foreman. Experienced on all types of metal finishes; now employed. Address IF-754, care Industrial Finishing.

WANTED — GRADUATE CHEMIST WITH ADVERTISING EXPERIENCE.

Eastern manufacturer has good opening for single young man, graduate chemist, with advertising experience in the paint, varnish and lacquer field. Duties include preparation of technical information and advertising copy for sales and promotion work. Applicants must furnish first-class references from past employers and state salary expected. Address IF-753, care Industrial Finishing.

NEW ENGLAND MAN WANTED.

Well-known manufacturer of wood finishing materials, lacquers and varnishes, with established trade in New England, is interested in obtaining representative with following in the furniture and woodworking factories there. Must have had finishing as well as selling experience and be able to furnish references as to ability, integrity and experience. All replies will be considered confidential. Salary and commission, or salary and expenses. Address IF-755, care Industrial Finishing.

WANTED.

Manufacturer of complete line of industrial finishing materials has opening; offering a very attractive commission proposition to a man of proven sales ability, and established following. Address IF-756, care Industrial Finishing.

SALESMAN WANTED

By leading manufacturer of wood finishing products, varnishes and lacquers, to cover Southwest territory. Interested only in one who has been successful selling these products in the territory mentioned and is a practical finisher capable of doing his own demonstration and service work. Give full particulars and references. Correspondence confidential. Liberal drawing account against commissions. Address IF-757, care Industrial Finishing.

DISTRIBUTORS WANTED.

Live Distributors wanted for one of the best 'Tac' Rags and Mechanical Paint Stripers on the market. Must have good connections with Paint Jobbers and Industrial Plants. PHILCO SPECIALTIES COMPANY, 365 S. Cloverdale ave., Los Angeles, Cal.

Practical Japanning and Enameling

HERE is the first authoritative handbook of its kind, containing much information that has never before been published. You will find between its covers facts, processes, and formulae that have been considered secret by many japanners.

The author has actually been doing this work for others for many years and he knows whereof he speaks. No one has ever gone into the subject of metal finishing more deeply than he nor has the subject ever been explained so clearly and effectively. This book was eight years in preparation.

Color plates and a multitude of tables and illustrations make the text even more clear and understandable. The volume is bound in harmony with its companions of the Practical Finishing Series and makes a rich, attractive appearance . . . 22 chapters.

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Practical Publications, Inc.

222 EAST OHIO ST.

INDIANAPOLIS, INDIANA

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Boston HILO **Chicago**

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A common test of toughness or life of a wood finish is the "thumb-nail" scratch test or even the edge of a coin, after a month or so of aging.

The best of present day wood finishes tend to become brittle and mar white when scratched after aging.

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This new H. T. A. is radically different from any other available wood finish. Have our Technical Division adapt it to your finishing department.

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